P621A

C-a-6

K VIII
Cla

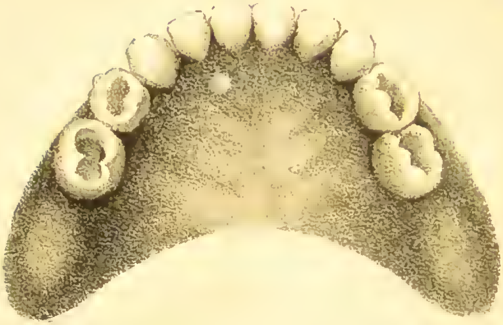
505
429

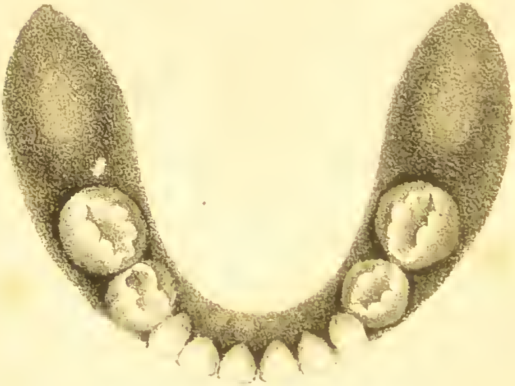
[illegible]

Digitized by the Internet Archive
in 2015

https://archive.org/details/b22020044

The Upper,





and Lower,

JAWS of a CHILD at 6 Years of Age.

lean del^{t}

43520

A PRACTICAL AND FAMILIAR TREATISE ON THE TEETH AND DENTISM.

BY

J. PATERSON CLARK, M A.

LONDON:
A. W. WEBSTER, 156, REGENT STREET.

1836.

C. WHITING, BEAUFORT HOUSE, STRAND.

WELLCOME HISTORICAL MEDICAL LIBRARY

PREFACE.

Several years ago the author published a Treatise, having reference more particularly to a peculiarity in his own practice, by means of which he was enabled to preserve a great majority of such carious teeth as were usually doomed to extraction. His process consisted in the successful application of anodynes; which, in the first instance, relieved pain, and subsequently prepared teeth, however tender, to be operated on, without inconvenience to the patient. The publication was so well received, as to pass through several large editions. Last year he was induced to publish a smaller Treatise "On Teething, from Infancy to the Completion of the Second Dentition, at about twenty-four Years of Age," with particular directions for the management of the teeth during that period.

Both works being now out of print, the author has endeavoured in the following Treatise succinctly to embody the substance of both publications in one continuous detail, with a view to enable parents themselves to become judges, not only of the necessary treatment of their own, but also of their children's cases, and thereby avoid the great and frequent error of permitting too early extraction of the shedding teeth; which, instead of occasioning room in the jaws, as is generally supposed, tends to counteract their growth, and renders them insufficient for the due development of the permanent ones.

This latter subject occupies the first four chapters, and the remainder of the work is devoted to the elucidation of the CAUSES OF DECAY, and its prevention or cure. The whole of the preventive process might be comprised in one word, "Cleanliness;" but as the construction of the teeth renders this extremely difficult, if not impossible in many cases, the different causes of this impediment are treated of, and the remedies pointed out.

TOOTHACH, with its cause, forms an important part of the treatise, and the author hopes, from the daily instances his practice affords, as well as the cases he relates, to convince his readers that this painful complaint will, in almost every form, yield to mild remedies, without occasioning the fearful one of extraction.

TIC DOULOUREUX, which, nine times out of ten, arises from decayed teeth, forms another chapter; and the last contains a discussion on ARTIFICIAL TEETH, the perfect construction of which is of the greatest importance to those, whom accident or early neglect may have deprived of those essential organs to health, their original ones. The whole is the result of observations made during a long and active practice; and being convinced that with due care the teeth are destined by the Creator to continue through life, the author is happy to add, that his experience justifies this conclusion, and the details he thus submits to the public, he believes will greatly assist in securing this desirable end.

SACKVILLE STREET, LONDON,
January, 1836.

CONTENTS.

CHAPTER I.

FIRST ERA IN TEETHING,

FROM BIRTH TO SIX YEARS OF AGE.

PAGE

1. First Era of Teething 2
2. The two Sets of Teeth . . . . . ib.
3. Number of the Teeth 3
4. Process and Periods of shedding first Teeth . ib.
5. Classification and Description of the Teeth . . 4
6. Sockets and lining Membranes of Teeth . . 6
7. Ossification of Teeth, cutting the First Set . 8
8. Teething, its Dangers, and Treatment . . 10
9. Teeth never increase in size after their protrusion from the Gums; the Jaws continue to grow like the other Bones 12

PAGE
10. State of primary Teeth when shed; sometimes they do not shed, and must therefore be extracted 15
11. Management of Shedding Teeth; objections to their premature extraction 16
12. Projecting Chin, and other irregularities of the Mouth 20

CHAPTER II.

SECOND ERA IN TEETHING,

FROM SIX TO TWELVE YEARS OF AGE. . 22
13. Remarks on Teething, addressed to professional men 26
14. Examination of a Mouth at Six Years of Age . 29
15. Reasons against Extraction, &c. . . . 30
16. The dissected Jaws of a Child . . . 36
17. Periods of cutting the Second Teeth . . 38
18. John Hunter mistaken as to the periods of cutting adult Teeth 41
19. The various Systems of regulating the Teeth . . 42
20. Of the Diseases and Irregularities of the Teeth; with appropriate treatment of the same . . 48

CHAPTER III.

THIRD ERA IN TEETHING,

FROM TWELVE TO EIGHTEEN YEARS OF AGE. . 50
21. Form and Condition of the Mouth and Teeth . . 51

PAGE
22. Cases of Irregularity 57
23. Tartar . . . . . . 61 and 127

CHAPTER IV.

FOURTH ERA IN TEETHING,

FROM EIGHTEEN TO TWENTY-FOUR YEARS OF AGE. 64
24. Number, Names, and Classes of the Second Set of Teeth 65
25. Cutting the "Wisdom Teeth" with pain . . 67
26. Regulating the Teeth as an entire Set . . 68

CHAPTER V.

INTRODUCTORY REMARKS ON THE PRINCIPAL CAUSES OF DECAY 74
27. All Decay commences externally . . . 78

CHAPTER VI.

ON THE CAUSES OF DECAY.

28. . . SHAPE OF THE DOUBLE TEETH. . . 82
29. Shape of the Teeth hereditary 89

PAGE
30. Decay not internal 94
31. Dead Teeth 96

CHAPTER VII.

ON THE CAUSES OF DECAY.

32. . . . LATERAL PRESSURE. . . 98

CHAPTER VIII.

ACCIDENTAL CAUSES OF DECAY . . . 110

CHAPTER IX.

OF THE GUMS 115

CHAPTER X.

ON PRESERVING THE TEETH . . . 122
33. Brushing . . . . . . ib.
34. Lotions, Powders, and Brushes 126
35. Tartar . . . . . . 61 and 127
36. Scaling 129
37. Polishing 134

CHAPTER XI.

ON PRESERVING THE TEETH . . . 136
38. Plugging . . . . ib.

CHAPTER XII.

PAGE
OF TOOTHACH, ITS CURE 149
39. Cases . . . . . . 168 to 186
40. Excision of Teeth 186

CHAPTER XIII.

ON TIC DOULOUREUX 188
41. Cases . . . . 193 to 203

CHAPTER XIV.

ON ARTIFICIAL TEETH 204
42. Cases . . . . . . 234 to the end.

DIRECTIONS FOR PLACING THE PLATES.

Upper and lower Jaws of a Child at six years of age, Frontispiece
Dissected Jaws of a Child . . . opposite page 36
Adult Mouth 66
The same Face with, and without, Artificial Teeth . . 211

CHAPTER I.

FIRST ERA IN TEETHING,

FROM BIRTH TO SIX YEARS OF AGE.

THERE are four natural eras, of six years each, in completing the human teeth, commencing about the first, seventh, thirteenth, and nineteenth years of age. After the completion of the first set of teeth, the commencement of each of the other three eras in teething is recognised by the cutting of four additional double teeth, one at each extremity of both jaws as they exist at the time; a jaw always requiring six years more to elongate sufficiently for the reception of these new teeth.

1.—FIRST ERA OF TEETHING.

The first era of teething, extending from birth to six years of age, is distinguished by the cutting, and complete development about the end of the second year, of the *twenty* shedding or first set of teeth; and by their permanency, as an entire set, until the seventh year, when they begin to be shed.

2.—THE TWO SETS OF TEETH.

Mankind is usually furnished with two successive sets of teeth; the first called deciduous, shedding, temporary, and milk teeth, from their short duration in the mouth; the second, adult and permanent, from their lasting, under favourable circumstances, for the remainder of life.

3.—NUMBER OF THE TEETH.

The proper complement of the shedding teeth is twenty; that of the permanent set is thirty-two.

4.—PROCESS AND PERIODS OF SHEDDING FIRST TEETH.

By a process of nature, the twenty shedding teeth usually loosen of themselves, in consequence of the absorption and actual disappearance of their roots; they accordingly drop out, one by one, between the seventh and thirteenth years of age (the second era in teething), during which period they are regularly succeeded by an equal number of teeth, having the same denominations and characteristics, only differing from their predecessors in size. These twenty new teeth of the second set, together with twelve additional ones that never change, constitute the full complement of thirty-two adult teeth.

5.—CLASSIFICATION AND DESCRIPTION OF THE TEETH.

Waving the scientific classification of the human teeth, we shall here consider them as consisting of two classes only, single and double teeth (incisors and grinders). For, although "man possesses, indeed, teeth called canine (eye-teeth), they do not, as in other creatures, exceed the level of the others, and are obviously unsuited to the purposes which the corresponding teeth execute in carnivorous animals."*

Of the twenty shedding teeth, twelve are single, and eight double. The single teeth are placed in front of the mouth, six in each jaw; and, from their employment there, of simply dividing the food, are called incisors. The eight double teeth are placed two in each side of a jaw, the fourth and fifth from the centre of the mouth, further back than the incisors; and from the nature of their employment, that of millstones, they are called grinders.

---

* Lawrence.

Incisors have each but one root; the grinders of the first set have three roots in the upper, and only two each in the under jaw.

That part of a tooth which is visible on looking into a mouth, is called its crown, or body; the part concealed in the jaw, its root; and the intermediate part, which is encircled by the gum, is called its neck. The body of a tooth is covered with a thin coating of enamel, much harder than the bone of which the tooth itself is formed, although that is the hardest of all bones. The enamel of teeth is, indeed, the hardest of all animal productions; but, on that very account, like flint, it is the more easily splintered, and readily resolves itself into its elements when touched with acids. The bone is of a more stubborn character; and when devoid of enamel, as in the lines, indentations, and inequalities of the double teeth that are inaccessible to the tooth-brush, or to the sweeping influence of the tongue and food during mastication, it softens and rots.

A tooth is not a solid body, but has an internal cavity, filled with nerves and blood-vessels. This cavity is large in the body of the tooth, and diminishes gradually towards the termination of its root or roots, where the internal membranes, consisting of nerves, &c. communicate with others of a larger description ramifying along, and within, the jawbones, and hence with the whole nervous system of the body.

6.—SOCKETS AND LINING MEMBRANES OF TEETH.

Each tooth stands in a socket, or alveolar process, of bone, formed expressly for its support. This socket is absorbed and disappears after the extraction of a tooth; although, on looking at a skull, the alveolar processes seem to be an integral portion of the jaw-bones. The gums, unthinkingly supposed by many to be the supports of teeth, have but little to do with the matter, as, on their removal, the teeth remain as firmly fixed as before The socket of a tooth is lined with a membrane, that answers the purpose of a pad, placed between it and the root of the tooth of which it is only the sheath: for if a tooth were to clink against the naked bone of its socket in mastication, the clatter would be intolerable, besides the danger it would constantly be subjected to of being broken when used. This lining membrane of a tooth's socket, and its internal blood-vessels, seem to unite in supplying a tooth with vitality; for on the obliteration of the one, or the receding from the tooth of the other, it begins to darken as if no longer supplied with blood.

7.—OSSIFICATION OF TEETH, CUTTING THE FIRST SET.

On examining the skull of a new-born infant, it will be found that ossification of all the shedding teeth has already taken place to a considerable extent, and a commencement made even of the four "six years old" permanent grinders. Instances occur where, previous to birth, one or more teeth have already cut the gum; although the usual time is from five to eight months of age. The cutting of the first teeth generally begins in front of the under jaw, followed by the corresponding ones in the upper. The set is completed in the second or third year. Differences of months or even years are to be met with, both in the coming and disappearing of the first teeth. These differences, however, can only be regarded as exceptions from a general law of nature, and have no reference to the constitutional condition of the child.

The following is pretty nearly the order, as to time and situation, in which the twenty shedding teeth cut the gums.

About five to eight months,—four incisors, the two front teeth in each jaw.

From seven to ten months,—four lateral incisors, the second tooth from the centre, in each side, of both jaws.

From twelve to sixteen months,—four grinders, the fourth tooth every where from the centre of the mouth.

From fourteen to twenty months,—the four eye-teeth, the third tooth, in each side, from the centre.

From eighteen to thirty-six months,—the four furthest grinders, the fifth tooth, in each side, of both jaws.

8.—TEETHING, ITS DANGERS, AND TREATMENT.

The teeth are said to be a greater source of suffering, at every stage of life, than any other part of the body. In infancy, the protrusion of a tooth from the gum, is as frequent a source of danger to the child, as its own birth was to the mother. "Teething is productive of local and constitutional complaints with local sympathy. The local symptoms are inflammation, heat, and swellings of the gums, and an increased flow of saliva. The constitutional, or general consequential symptoms, are fever and universal convulsion, attended by diarrhœa, costiveness, loss of appetite, eruptions on the skin, especially on the face and scalp; cough, shortness of breath, with a kind of convulsed respiration; spasms of particular parts; an increased secretion of urine, and sometimes a diminution of that secretion with a discharge of matter."* As it is in the power of art to prevent, or greatly to mitigate the evils of teething, nurses ought to make themselves acquainted with the symptoms of their approach. For some time before the protrusion of a tooth, that part of the gum which lies immediately over it, is observed to swell into something like the shape of the approaching tooth. The front teeth are shaped like wedges, sharp at their cutting points, and thicker towards their roots: they therefore cut their way through the gum with comparative ease, and their coming is proportionably free from danger to the child; but the grinders, of which there are eight belonging to the first set of teeth, are formed with flat grinding surfaces, that cannot cut, but only distend the gum, occasioning great local irritation. The inflammation always attendant on this tension of the gums, produces absorption of the part, to make way for the obtuse forms of the double teeth. The prevention of ill consequences from bad teething is easy at first, being simply to lance the gum as often as it may be required. One must cut fearlessly down to the tooth, as harm cannot be done even by many repetitions of the operation. The child cries because its mouth is forcibly opened by a stranger, but does not experience pain. " As far as my experience has taught me, to cut the gums down to the teeth appears to be the only method of cure. I have performed this operation above ten times upon the same teeth, where the disease had recurred so often, and every time with absolute removal of the symptoms."*

---

* Hunter.

9. — TEETH NEVER INCREASE IN SIZE AFTER THEIR PROTRUSION FROM THE GUMS; THE JAWS CONTINUE TO GROW LIKE THE OTHER BONES.

About the end of the second, or beginning of the third year of age, when the first set of teeth is completely developed, perhaps no object in nature can look more beautiful than the mouth of a child when all the circumstances are favourable. The form of the jaws is semicircular; the gums are of one uniform healthy colour; the teeth are of beautifully-shaped ivory, without the appearance of a flaw. Teeth once formed, and thus arranged, can never undergo any change but for the worse; the jaws, however, in which they are arranged, are subject to continuous change. Teeth attain the utmost size of which they are ever capable while within the jaws, but the jaw-bones continue to enlarge like other bones during the growth of the body. Soon after the completion of the first set, spaces begin to appear between them; which, in favourable circumstances, continue to enlarge until the succession of the second teeth.

---

* Hunter.

This is sometimes a source of unreasonable anxiety to parents: without reflecting on the changes necessarily taking place at an early age, they expect the mouth of a child to continue always equally beautiful, and hence his first fertile source of torture.

The most striking change in the structure of the jaws takes place at both their extremities, where four new permanent teeth make their appearance at six years of age, and in situations formed expressly for their reception, since the completion of the first teeth. They are placed the last tooth in each side of the upper and lower jaws,—the sixth tooth every where from the centre of the mouth. *See the Frontispiece*, representing all the shedding teeth, and the first of the permanent ones making its appearance through the swelling gums.

All the additional teeth of the second set, without any reference to those that change, make their appearance four at a time, in the same manner, at intervals of six years; thus distinctly indicating periods that may be reckoned as natural eras in teething.

10. — STATE OF PRIMARY TEETH WHEN SHED; SOMETIMES THEY DO NOT SHED, AND MUST, THEREFORE, BE EXTRACTED.

What is most remarkable in the economy of the first set of teeth is the manner in which they are ejected from the jaws, to make room for the second; their roots are absorbed as their successors advance. Nothing analogous to this takes place in any other part of the body; not even in the permanent teeth themselves, however affected they may be with caries or other diseases. Sometimes it happens that no absorption of the roots ever takes place; in which case nothing remains but to extract them, tooth for tooth, and no more, as their successors arrive, in order to prevent a double row.

This feature in the mode of shedding first teeth ought to be impressed on the minds of all those who would permit the teeth of children to decay, " because they are to be shed at any rate." "The shedding teeth are as subject to caries, if not more so, than those intended to last through life."* It will be recollected that caries of the first teeth does not necessarily favour their ejection from the jaws, while it frequently occasions much annoyance to the little patient, even to the endangering his health.

11.—MANAGEMENT OF SHEDDING TEETH; OBJECTIONS TO THEIR PREMATURE EXTRACTION.

Since the decay of children's teeth does not favour the process of shedding them, and since it occasions exposure of their nerves, with consequent torture, is it not reasonable to expect that the same attention should be paid to them as to their permanent successors? The whole art of this care lies in cleanliness. Were every part of a tooth kept perfectly clean, there would be no decay of its substance: decay, when it does occur, invariably commences in a part that is not, or that cannot, be kept clean with the tooth-brush or the tongue, or that is not polished by the friction of mastication. Let children, therefore, be taught the free use of a tooth-brush as soon as they are old enough to use one.

---

* Hunter.

It frequently happens that the double teeth are formed with deep lines and indentations on their surfaces, in which the relics of food unavoidably remain and stagnate; and, owing to the imperfection of the enamel in these lines, they reach and affect the bone with cariosity. This is the principal cause of an offensive breath. For this the remedy is simple: where the double teeth have deep indentations, let them be artificially filled up and their surfaces made level, as is the practice with respect to permanent teeth. This operation, to be sure, cannot be performed so well in the mouth of a child as of an adult, but still sufficiently so for a temporary purpose; the stopping ought to be revised from time to time. By these means young persons may retain the perfect use of their first teeth to the last day of their duration: at about twelve years of age.

The greenish thin tartar that collects on the outside of first teeth ought to be rubbed off with a wooden toothpick. Cuttlefish bone, or, should that fail, pounded pumice-stone, or fine sand, may be used as a tooth-powder with impunity.

We have spoken only of the decay of double-teeth, ascribing it to their shape; but all teeth when much crowded together are liable to decay, from lateral pressure: no cleansing process can reach between teeth in very close contact with one another. The remedy for this, should symptoms of decay appear, is fairly to open a space between them with a file or other cutting instrument. Let the newly cut surfaces be made as even and smooth as possible, and kept clean, and teeth so treated will last and be useful as long as their services may be required.

There are other reasons for preserving first teeth to the proper time. "The rudiments of the permanent teeth, instead of being original and independent, like those of the temporary, are in fact derived from them, and remain for a considerable time attached to, and intimately connected with them."* "I am led, by this consideration, the more decidedly to deprecate their too early extraction, with whatever object it may be proposed. We must not, however, disregard the injury which the extension of severe inflammations to the permanent rudiments may produce in the formation of the permanent teeth. As soon as pain is produced, any of the applications useful for toothach should be applied."† The best, perhaps, is diluted spirits of wine, or gum mastich dissolved in spirits, and applied in wool. If these remedies fail to have the desired effect, the dentist may probably be able to hit on some remedy more suited to the case. "Should the plan for the reduction of the inflammation have failed, and especially should suppuration have taken place, the immediate removal of the teeth is imperatively called for."*

---

* Bell. † Ib.

12.—PROJECTING CHIN AND OTHER IRREGULARITIES OF THE MOUTH.

In concluding this part of our subject it may be proper to remark on the force of habit in establishing the style of the future mouth. "It is about the time of the completion of the first teeth that the projecting under-jaw gradually begins to show itself, and shortly before the appearance of the second set from the surface of the gum. At the commencement it occurs that one or both of the first eye-teeth in the under-jaw are somewhat longer than the rest, and are pointed on the top, so that in shutting the mouth the under-jaw is thus prevented taking its proper direction. The child, not being aware of its pernicious consequences, stretches out the lower jaw; attempts in that manner to overcome the difficulty of the free action of the teeth; and constantly is seen in the act of pushing the lower jaw outwards: this, unobserved or neglected at first, grows into a determined habit; and a mischief at first easily controlled, becomes the foundation of this defect; for the jaw gradually lengthens itself out from the articulation on each side, to relieve itself from the bad position in which it was placed, and thus the jaw becomes completely underhung. The remedy, in the very early stage of the deformity, is very easy, simple, and satisfactory."*

---

* Bell.

---

* Sigmond.

CHAPTER II.

SECOND ERA IN TEETHING,

FROM SIX TO TWELVE YEARS OF AGE.

The second era in teething, commencing about six years of age (four years after the completion of the first set), is distinguished by the cutting of four new teeth, in addition to the twenty shedding ones. They are called the "six years old" permanent grinders, as they never change. Their place is the sixth tooth every where from the centre of the mouth. By them the complement of twenty teeth, at this age, is increased to twenty-four; which number, notwithstanding the important changes that take place in the mouth during the ensuing six years, is not exceeded before twelve years of age, when four more grinders intimate a new era, being the third, in teething.

The second is by far the most important era in cutting the human teeth. During this period four new permanent grinders make their appearance in the mouth, in parts of the jaws formed expressly for their reception, since the completion of the first set. During this period the twenty teeth of the first set are, or ought to be shed, and their identical places supplied with an equal number of successors —teeth having the same characteristics and denominations, but differing greatly from their predecessors in size and strength: during this period also the jaws become, or ought to become, sufficiently enlarged for the proper development of these twenty teeth that come a second time.

On the treatment during this period must depend the future appearance and comfort of the mouth. In order to understand the treatment here proposed, a most important feature in the economy of the teeth must ever be present to the mind; teeth once formed, which happens while yet within the jaws, are completely formed, and do not continue to grow afterwards, while the jaws that contain them do. Were it not so, one set of teeth would be sufficient: like other parts of the body they would enlarge, and seem at every period of life in keeping with the surrounding features of the countenance. But the nature of their enamel forbids this; like glass, it cannot be expanded without cracking. The teeth are, in fact, unlike any other part of the body, and in describing them, nature affords no parallel. They form a system within a system; bones, with a part of them exposed to external influences, and a part to internal ones only. Other bones may be broken, and they will heal again; they may be diseased, and recover by exfoliating the diseased part; but the teeth, once formed, are formed for ever. They never undergo any change but that of deterioration. Nature has not provided a renovating power for injuries of the teeth; they were doubtlessly intended to be as permanent as life. The nails and hair are thrown off, and still there is a new supply of their substance. But with respect to the teeth, if the smallest flaw exists in their surface, if but the smallest chip be removed at the time of their first appearance in the mouth, the deficiency remains unrepaired by nature for the remainder of life. Touch but a point of enamel with strong acid, and it remains a blemish for ever. "Another circumstance in which the teeth seem different from bone is, that they never change by age, nor undergo any alteration when completely formed, but by abrasion: they do not grow softer like other bones, as we find in some cases, where the whole earthy matter of the bones has been taken into the constitution."*

13.—REMARKS ON TEETHING, ADDRESSED TO PROFESSIONAL MEN.

A knowledge of these facts ought to have its due influence on the minds of all those who would advise others respecting the treatment of their teeth. Much of our happiness or misery in this world depends on the teeth. The diseases to which they give rise when cutting the gums, at the commencement of each of the four eras in teething, have not been so well ascertained by medical men as their importance deserves; and yet the observant dentist has traced, in imperfectly-formed teeth, the very periods of life at which their possessors were afflicted with illness.

---

* Hunter.

On the health of the mother, during pregnancy, depends the quality of the first teeth. On the health of the child, at the time the various teeth of the second set are ossifying, a period extending to twelve years, depends the supply of healthy material for their formation. Even layers of sound and unsound enamel, as when honeycombed, can be traced on the same teeth in many persons, according to their varying shades of health and illness during the time of its first deposition within the jaws. Are the teeth, then, not of sufficient importance to require an equal knowledge of their diseases and treatment, on the part of medical men, as other parts of the body? The author begs respectfully to say that they are; and, more especially, of those various diseases which arise from external influences, as relics of food, acid saliva, tartar, abrasion, &c.; for to the medical faculty the public generally appeal in such matters. Is it too much to expect that they who regard it as more glorious to restore than to amputate a limb, should know something of the teeth beyond mere extraction? Has professional bias, or an exclusive education, any thing to do with this neglect? Mr. Bell, a competent judge, observes, that "In addition to the neglect of the study of the anatomy and diseases of the teeth by medical students, and the dearth of information on a subject confessedly of no trifling interest, another is to be found in the unprofessional character of those persons to whom the treatment of the teeth has been too generally restricted; and the unmerited neglect which the subject has consequently received from the regular practitioners, to whose care, from their education and experience, the treatment of those organs would be more legitimately confided."*

---

* Since the above was written, a treatise on Teething, of deep research, has been published by Dr. Ashburner, which ought to be in the hands of every medical practitioner.

14.—EXAMINATION OF A MOUTH AT SIX YEARS OF AGE.

It has already been stated that the second era is the most important in teething: 1st, Because it commences with the cutting of four new permanent grinders that required six years for their development, in parts of the jaws, formed expressly for their reception since completing the first set;—2d, Because during these six years, all the teeth of the first set either are, or ought to be shed, and their identical places supplied with an equal number of successors having the same denominations and characteristics, and only differing from their predecessors in size; and, 3d, Because it is not the nature of teeth to grow larger in the least degree after they have once cut the gums; while the jaw-bones, regulated by the same laws as other bones, continue to enlarge gradually with the body.

In order the more readily to understand the inferences to be deduced from these facts, let us look into the mouth of a child about six years old. We shall there see twenty-four teeth, twelve in each jaw; four of them permanent, and that come but once; the others shedding teeth. Reckoning from the centre of the mouth, the sixth tooth every where is the permanent one; and, as it has made its appearance at so early a period, it is frequently mistaken for a shedding tooth, and, like one, too often permitted to decay.

15.—REASONS AGAINST EXTRACTION, &C.

I know that I am here treading on delicate ground, when, in candidly stating my own opinions, I observe and follow nature. The fashionable practice has been to remove these "six years old" grinders to make room in the jaws. I would ask the advocates of this treatment, whether, if one or two teeth be extracted from any part of the mouth, between six and twelve years of age, the space does not become obliterated by the approach of the adjoining teeth, and not by an increase of their numbers? and whether they do not find decay afterwards attacking teeth thus approaching, although room was supposed to be made for them? Nature endeavours to repair the injury inflicted by extraction, by stopping the growth, or rather by diminishing the jaw at this part, and by permitting the easy approach of the others to one another: mindful, without doubt, of original intention as to beauty of form as well as utility. "Premature extraction often produces an effect quite contrary to that intended; as, in such cases the gums and alveolar processes shrink back to the permanent teeth, which have not come forward; so that the space, instead of being enlarged, becomes contracted."* In humble life we seldom meet with irregular teeth at an early age, however much they may be injured and lost through ignorance of their management afterwards. Had nature intended that those four teeth should be shed, she would assuredly have provided for their expulsion. The first teeth, where neither an accident nor weakness of constitution interferes, drop out of themselves, their roots being as completely absorbed as if they never had possessed any: but this happens only to the twenty primary teeth. Again, with what instrument could animals (which also shed the first teeth) or uncivilized man remove the permanent teeth of their offspring? "No dentist of respectability would extract shedding teeth before the permanent ones appeared ready to occupy their place; at least not without strongly protesting against such an operation. Nor should children's teeth be prematurely extracted on account of toothach; and until the proper time of removing the tooth we would recommend the usual palliatives."*

---

* Murphy.

---

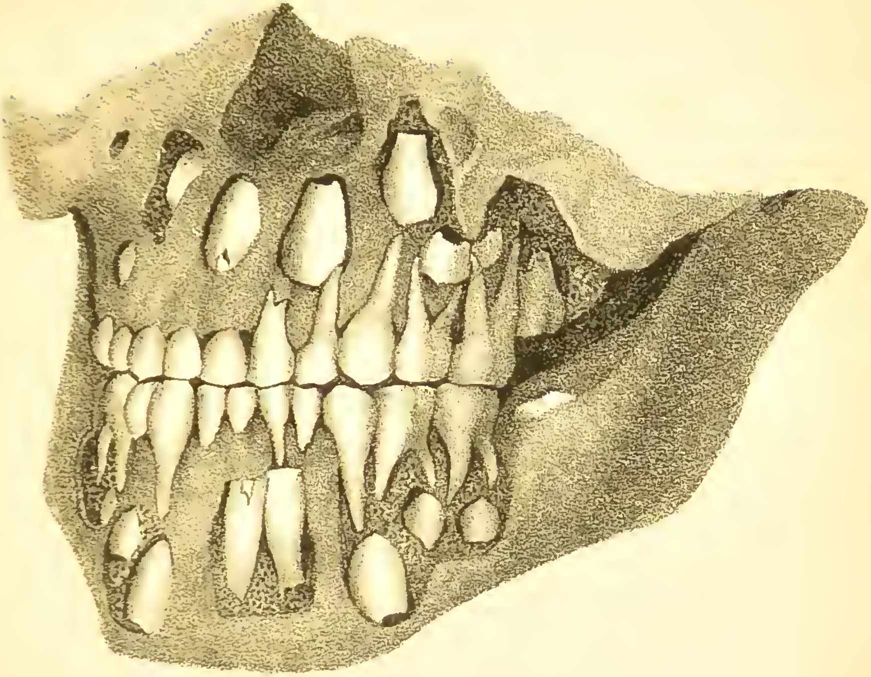
* Fuller.

There are other and powerful reasons for preserving these "six years old" grinders even in the worst of cases: they have a peculiar duty to perform. Still looking into the mouth of the child before us, we shall see that in closing the teeth, the sixth in each side meets an antagonist in the other jaw; the flat, wide surface of the one opposing that of the other, quite unlike the sharp, wedge-shaped front teeth. The form of the grinding surfaces of double teeth is such, that no pressure can bring the jaws nearer to one another than where they first meet; while in front of the mouth, after the loss of the double teeth, the incisors of one jaw overlap those of the other, in such a manner that the one row or other would be displaced by continuous pressure.

At this age, too, perhaps the child's primary grinders are broken down with disease, and no longer capable of warding off the pressure which, but for the intervention of the "six years old" grinders, must necessarily fall on the front teeth, which office they had hitherto to perform; for in perfectly organized mouths, the front teeth, although they touch front teeth in the other jaw, never press severely against them. In well-formed mouths a slip of paper might be drawn away without tearing, however much a person wished to retain it, owing to the manner in which the jaws are propped by the meeting of the flat, grinding surfaces of double teeth. This, then, is the reason why these permanent molares come into the mouth at so early an age. The shedding grinders are generally in a condition to sustain the pressure of the jaws until the "six years old" can attain their proper station above the gums; for by pressure they could be made to stick midway, or even kept on a level with the gums, for life. Does it not appear, then, that if the shedding grinders be prematurely lost, through disease or extraction, before their permanent neighbours have attained their proper stations in the mouth, the pressure would inevitably fall on the front teeth, and push them about in every direction except the right one; and that a mouth meant to be beautiful, would thus be blemished for life? Should the necessity ever arise for extracting any of these teeth, it is better, perhaps, for uniformity's sake, to extract the whole four; not, however, before twelve years of age, when four additional grinders, the seventh every where from the front of the mouth, will advance into their places. The operation then would be comparatively a safe one, in consequence of eight other new double teeth, nearer the front of the mouth, having succeeded to the primary grinders, to support the jaws, and ward off undue pressure of the front teeth of one jaw from those of the other.

16.—THE DISSECTED JAWS OF A CHILD.

The annexed Plate represents the child's jaws dissected; and we there find the astonishing number of forty-eight teeth in the child's mouth at the same time, viz., the twenty shedding ones and four permanent grinders in sight, and twenty-four others, at the various stages of ossification, concealed within the gums and jaw-bones. Some of the shedding teeth are without roots, or nearly so, preparatory to their dropping out, by the beautiful and wonderful process of absorption of their roots; the teeth of the second set are as yet without any, excepting those which have cut through the gums; for the roots are gradually added as the teeth advance into view. But the principal fact to be regarded at this stage of teething is the size of the new teeth, they being equally large, as far as the ossification has proceeded, as ever they can become; for on that part of a tooth



Dissected Jaws of a Child at 6 Years.

Showing the full complement of the shedding Teeth, & the situation of their Succeſsors.

ger del.

which is usually covered with enamel, and that is seen above the gum, it is as large in the child of six as in the parent of fifty; "whatever part of the tooth is formed, it is always completely formed; which is not the case with other bones."* See how the second teeth lie huddled together—those of a man in the small jaws of a child. Remember, too, for now the new teeth are cutting the gums in spaces not sufficiently ample to contain them, that the jaw-bones continue to enlarge for at least six years more; when, if their arrangement be left to nature, the second teeth are likely to find sufficient accommodation for themselves. At least, the rule ought to be, that only one tooth may be removed, to make room for its own identical and proper successor; and not two, as is too commonly the case. The only other thing to be particularly attended to during the changing of the teeth, is, that they be not permitted to take a wrong direction; as, for example, when one upper incisor shuts inside, and another outside the under teeth. This may be effected by training the erring tooth with the finger, or by the help of a lever, say the point of a silver or ivory knife; or should these means fail, by a bridge of metal worn for a time on the under teeth, to convey the offender in the upper jaw outside the under one.

---

* Hunter.

17.—PERIODS OF CUTTING THE SECOND TEETH.

The second teeth cut the gums in nearly the following order as to time; the first deposition of the bone upon their pulps, having preceded their protrusion from the gums, by six years or upwards. One or more month's difference in cutting the corresponding teeth in different individuals is not considered a matter of any consequence. Varieties of even two or three years may sometimes be met with, but unattended with any remarkable circumstance. The teeth of the under-jaw usually precede the coming of the corresponding ones in the upper-jaw. The teeth about to be shed are the twenty primary ones of the first set; twelve of them single, and eight double. The teeth about to cut the gums consist of thirty-two, being the usual complement of adult teeth, of which six in each jaw are single, as with first teeth, and ten double, instead of four, as in the first set. Of the thirty-two new teeth, no more than twenty can come a second time; the other twelve come but once and for ever.

All the teeth of the second set are much larger than those of the first, except the grinders; double teeth of the first set being actually larger than their successors. These latter, the fourth and fifth from the centre of the mouth, are called small grinders, being indeed small compared with the large grinders placed beyond them, which come but once.

At about six years of age four permanent grinders cut the gums; one at each end of both jaws, being the sixth tooth in each side from the centre of the mouth.

About seven,—four incisors; the two centre teeth in each jaw.

About eight,—four lateral incisors; the second tooth every way from the centre.

About nine,—four small grinders; the fourth tooth every where from the centre.

About ten,—four more small grinders; the fifth tooth in each side of both jaws.

About eleven,—four eye-teeth; the third tooth every where from the centre of the mouth.

About twelve,—four large additional grinders in newly-formed parts of the jaws, which, after an interval of six years without cutting additional teeth, mark a third era in teething; they are placed the seventh tooth, in each side, from the centre.

About eighteen,—four more grinders, the wisdom teeth, begin to appear, which, after another interval of six years, mark the fourth era in teething; their place is the eighth tooth from the centre of both jaws.

18.—JOHN HUNTER MISTAKEN AS TO THE PERIODS OF CUTTING ADULT TEETH.

It has been unfortunate for many persons that Hunter, in his celebrated Treatise, has wrongly stated that the first permanent grinders do not cut the gums before twelve years of age; whereas, in reality, they appear at six; those four teeth that come at twelve being the second of three series of double teeth. "The first adult molaris comes to perfection and cuts the gum about the twelfth year of age; the second about the eighteenth; the third, or *dens sapientiæ*, from the twentieth to the thirtieth."* Perhaps his accidental mistake has led many of his admirers to practise on their patients accordingly. The dreadful operation of transplanting living teeth originated with him; but was soon discontinued, in consequence of the diseases which transplanted teeth communicated to their new possessors. There are persons yet living who recollect seeing crowds loitering near the doors of dentists, ready, when a wealthy purchaser could be found, to dispose of their masticators for money.

---

* Hunter.

19.—THE VARIOUS SYSTEMS OF REGULATING THE TEETH.

It has been stated that four permanent grinders have already appeared in the mouth; which, from the early age at which they make their appearance, are frequently mistaken for shedding ones, and, like them, often permitted to decay. As it is the firm conviction of the author that these "six years old" grinders were intended to last for the remainder of life, and that it is within the reach of art to effect this even where counteracting circumstances interfere, he hopes to carry home the same conviction to the minds of others, in order, if possible, to restrain the cruel practice of extracting.

As each of the shedding teeth is to have a successor in the identical spot it hitherto occupied,—and as the second teeth are of larger dimensions than the first;—as the jaws, too, continue to enlarge during the six years required by nature for changing the teeth, themselves not enlarging during the while, which is the cause of their temporary irregularity in the dental circle;—does it not seem reasonable to expect more room for them at last, by leaving the care of them to nature, at least until she has done her best with the case, without resorting to early extraction, which only causes contraction of the part?

That the reader may have a better opportunity of judging for himself, he may peruse the arguments adduced by the advocates of both methods.

"The temporary teeth are seldom shed fast enough; and the consequence is, that the permanent teeth, not finding their natural opening, shoot out in a false direction. As a general rule, the safest practice is to extract the four temporary incisors. A few months subsequent to this, it becomes of the utmost importance to attend to the forthcoming lateral incisors. To make room for the lateral incisors (the second from the centre), it is requisite to remove the temporary eye-teeth (the third from the centre of the mouth) in each jaw; when the child, as far as the four front teeth are concerned, may be considered in a perfect state of safety. We have now arrived at a period when twelve of the temporary teeth, six in each jaw, have been removed; and when eight of the permanent set, four in each jaw, have taken their proper places; leaving eight more temporary teeth to be shed. It is advisable to remove the primary grinders (the fourth and fifth from the centre of the mouth), and as they occupy a much greater space in the circle than their successors, their extraction will also make room for the eye-teeth (the third from the centre). Without considerable attention, deformity is apt to take place on the advancement of the upper eye-teeth. Room, in such cases, must of course be made for them at whatever expense; and as there are no longer any temporary teeth to be removed, it becomes a matter of serious consideration what teeth ought next to be extracted."* The concluding sentence speaks volumes against the premature extraction of the shedding teeth.

Those who think with the author argue as follows: "There is no subject connected with the management of the teeth, which has given rise to so much gratuitous cruelty, as that which regards the treatment or prevention of irregularity in the permanent teeth. It were well if the intentions of nature were more attended to in the regulation of the teeth, than has generally been the case. In this, as in every other circumstance in which surgical treatment is required, it should be recollected that the legitimate object of the surgeon is confined to the application of remedies in a disease, or the regulation of the natural functions when they are deranged; and it is not to be supposed that a process of so much consequence to the comfort and health, and essentially connected with a function so important as that of digestion, should be so imperfectly provided for, as to be constantly in need of such harsh and unnatural intemperance. I have known no less than eight, and even ten, firm teeth forcibly removed from the jaws of a child at once. I will not employ the terms of indignation and disgust which such barbarous quackery deserves; but surely the unnecessary infliction of pain, upon the plea of preventing an evil, which in the majority of instances there is not the slightest reason to apprehend, and which even where it might occur, can always be detected in time to obviate it, is of sufficient importance to deserve reprobation, even were this the only injury which could result from the treatment recommended in the foregoing passage.

---

* A cotemporary.

But there are other and more important reasons for avoiding the early removal of the deciduous teeth: the connexion between the temporary tooth and the succeeding permanent one. If the temporary teeth be removed before the permanent ones are so far advanced as to be ready to occupy their situation, the support of the alveolar processes (sockets of the teeth) being thus lost, the arch of the jaw (dental circle) contracts; and when, subsequently, the permanent teeth are fully formed, there is not room for them to range in their proper situation. I have seldom or never found any ultimate injury to result from leaving the first teeth even until the permanent ones had acquired considerable size, unless when the jaw itself has been ill formed.

"The simple and uniform principle is to leave the temporary teeth as long as may be, without risking the permanent irregularity of their successors. I have often had reason to congratulate myself upon the result of having refrained from extracting permanent teeth until the age of fourteen or fifteen years should have decided whether they would be ultimately necessary. I have successfully treated a case of this description as late as between nineteen and twenty years of age."*

20.—OF THE DISEASES AND IRREGULARITIES OF THE TEETH; WITH APPROPRIATE TREATMENT OF THE SAME.

"Probably a tooth might, by slow degrees, be moved to any part of the mouth."†

---

* A cotemporary.

† Hunter.

Having once decided on the course to be pursued with a mouth; whether it be that of extraction to make room for the new teeth, or leaving their arrangement to nature, it must not be forgotten that instances occur in which the roots of first teeth are not absorbed, nor consequently shed. In cases of this kind it will be necessary to remove a first tooth on the approach of its successor, to prevent the awkward and inconvenient appearance of a double row. In either case the same necessity exists for preventing the decay and premature loss of first teeth.

CHAPTER III.

THIRD ERA IN TEETHING,

FROM TWELVE TO EIGHTEEN YEARS OF AGE.

THE THIRD ERA in cutting the teeth, commencing about twelve years of age, is distinguished by the coming of four additional teeth, the "twelve years old" grinders. They are placed the seventh tooth from the centre, one in each side of both jaws; and, after an interval of six years in cutting additional teeth, increase the complement at this age to twenty-eight; which number is not exceeded in the mouth before eighteen years of age, when the fourth and last era of teething commences.

After twelve years of age, we are not to expect much, if any, enlargement of the jaws, except at their extremities, where room must be found for the wisdom teeth, and in spaces that require six additional years for their growth.

21.—FORM AND CONDITION OF THE MOUTH AND TEETH.

Keeping these facts in view, when we would regulate a mouth at or after twelve years of age, there are two principal features in the economy of the teeth that require our most serious consideration,—the form of the mouth, and the actual condition of the teeth. "The teeth of the upper-jaw, when they are in the most natural state of contact, project a little beyond the lower teeth, even at the sides of the jaws; but still more remarkably at the fore part, where, in most people, the upper teeth lie before those of the lower jaw."* There are three conditions of a mouth that may be considered regular, because seemingly natural; any deviation from which is considered a deformity. The slightest deformity of a mouth unconsciously excites less or more dissatisfaction in the mind of the beholder, which he finds it difficult to account for from ignorance of the cause; and yet it is easily explained. Fortunately much, if not all that could reasonably be wished, can be done for a mouth, however unpromising, at this early age; for, "in youth the jaws have an adapting disposition. On the loss of a tooth at fifteen years of age, the two neighbouring teeth approach one another, in every part alike till they close."† The same adapting disposition brings it greatly within the reach of art to produce, in the most unfavourable circumstances, one or other of the forms here alluded to. The forms of the mouth that may be considered regular are;—1st. When all the upper front teeth shut outside those which are opposed to them in the under-jaw.—2d. When the front teeth of both jaws meet in the same vertical line, edge to edge.—3d. When the teeth of the upper-jaw shut inside the under teeth. The first of these forms is the most common, and it is considered to be the handsomest; the second is scarcely perceptible; while the third is considered all but deformed; and yet it is rarely to be seen but in a countenance otherwise pleasing. Each of these forms of the mouth has its peculiar advantages and disadvantages. In the first, while the double teeth remain entire, receiving the shock of the jaws in mastication, the severe and always injurious collision of the front teeth is prevented; but after the loss of any, or all the grinders, the front teeth meet their opponents with a severe lateral (not direct) touch, that by frequent repetition loosens, and ultimately expels them, however sound, from one jaw or the other. The reason is, that front teeth are shaped like wedges, thickening towards the gums; on which account, when the jaws approach nearer than formerly, the thicker parts of the teeth meet, aiding as with a lever the process of their expulsion. This state of affairs is a frequent occurrence in the mouths of aged persons; it may however be equally the result of tartar at any age.

---

* Fuller. † Hunter.

In the second form of a mouth, when front teeth meet front teeth, cutting-edge to cutting-edge, after the loss of the grinders, the process of mastication frequently wears down front teeth to the very gums. This, perhaps, is better than that they should be expelled altogether, as in the first case. The process of their wasting by attrition is so slow, that the parties concerned scarcely ever perceive the change that is taking place. The way to prevent these unpleasant consequences is to preserve, as long as possible, the back teeth, which are so constructed as to resist injury from (fair play) mastication for a century, should their services be so long required; or to supply their places with artificial grinders.

In the third form, the advantages and disadvantages are much the same, or nearly so, as in the first. Deviations from all and any of these forms of the mouth must be regarded as irregularities, if not decided deformities.

Irregularity of the teeth may be the result of accident, or it may appear to be owing to natural causes. Of accident, as when one or more teeth have been knocked out by a fall or blow, and when, from the adapting nature of the jaws, the adjoining teeth have so approximated as to leave it doubtful whether the proper teeth belonging to that situation had ever existed there; or as when the front teeth of one jaw meet their opponents of the other, stragglingly, some shutting outside and some inside of them. An irregularity may seem natural when the teeth are out of proportion to the jaws that contain them, being either too large or too small; by which the appearance of a double row is produced. This state may indeed be natural in a particular case; but as we find no such irregularity in animals, or persons in a state of nature, it is not unreasonable to infer that nature's intention has only been thwarted in the present instance; as with rickety bones. Do we not constantly meet with cases of deformity and irregularity of other parts of the body, arising from ill health, confinement, &c., as in factories. With respect to the teeth, let it always be kept in mind that they are originally formed of the largest dimensions they can ever attain to—long before their protrusion from the gums,—and while the jaws were yet, and for years after, in a state of growth, which growth and perfect development may have been interfered with. May not a refined state of society have something to do with the matter, as we find less irregularity in the mouths of rustics who crawl, creep, or walk about from the earliest infancy, in the open air, under every aspect of the heavens, than in the mouths of their superiors, who are often nursed into a delicate state of health; but who afterwards retain their teeth, whether good, bad, or indifferent, for a longer period, from their superior care and cleanliness.

22.—CASES OF IRREGULARITY.

A remarkable instance of irregularity, the result of accident, came under the notice of the author in the case of one of two brothers, twins, who were strikingly like each other until you looked at their mouths. One had his two central incisors struck out by a cricket-ball when a boy,—the lateral incisors approached each other and filled up the vacancy; but as lateral incisors in the upper jaw are considerably smaller than the central ones, a species of rabbit mouth was the result, which greatly injured the appearance of a very fine countenance.

Another instance of irregularity occurred in a family consisting of three sisters, who had each a small grinder extracted at Bath, under the impression of its being a duplicate of an eye-tooth, in the right side of the mouth in the upper-jaw. There was an evident falling in of the mouth at the part, which was the more vexatious as there was not an unsound tooth in any of their heads; while the space remained, the operation having been performed after the jaws had ceased growing.

In regulating a mouth, then, we are to consider, first, whether there be room enough in the jaws for the full complement at this age of twenty-eight teeth; and whether all the teeth are sound and worthy of preservation. If there is room enough, we are to consider whether the teeth of both jaws meet properly in shutting, according to either of the three forms of the mouth described above; taking care that all the teeth of the upper-jaw shall form an unbroken semicircular figure; shutting within or without an equally regular figure of the under-jaw, or meeting them in the same vertical line.

It is desirable to produce the first form, if possible. This may be effected in some cases by extracting two small grinders, one from each side of the under-jaw, in order to diminish its circumference, if too large; or if less space be required, by extracting one only of the four front teeth, which in the under-jaw are so nearly alike, that its absence would not be noticed.

We are next to observe the state of preservation of the teeth; for if some be weakened by disease and so shattered that they are likely to be lost at any rate, it is better to extract them; permitting the others to bend to this necessity, and, if necessary, to force them by art into stations now more desirable, although not originally intended for them. This can be effected to an incredible extent, owing to the accommodating nature of the jaw-bones. "In the case of a young lady, at an age when the shedding of the first set was complete, and permanent successors had supplied their places, the upper jaw was as full of teeth as it could contain, and yet only one of the eye-teeth had made its appearance. At a periodical examination of the young lady's mouth, the point of a tooth was seen protruding from the roof in the rear of the left lateral incisor: this was the deficient eye-tooth: the appearance in such a place was unusual, and as it gradually descended, it pushed out the adjacent incisor. Had the incisor been extracted, the new tooth would readily have fallen into its place, only meeting the under-jaw within the teeth, while the others closed outside in the usual way. Had this course been pursued, the young lady's mouth would have been so far deformed, that an eye-tooth would have to correspond with a small lateral incisor on the other side of the two handsome central front teeth. It was determined to extract the first small grinder instead; and, with much trouble on the part of the patient and operator, the new eye-tooth was trained to attain its proper place. The process of cure occupied several months, during which period the young lady visited the dentist about half-a-dozen times, to have the little apparatus that was employed altered. The teeth are fully worthy of the trouble; and the fair patient has now as uniform and beautiful a set of teeth as can reasonably be desired. None but those who try the experiment can appreciate the difficulties of this case."

23.—TARTAR.

Another danger to which teeth are subject at this age arises from tartar, a deposit from the saliva, which is particularly abundant during illness.

---

* Imrie.

After a severe fever, one continuous crust of tartar is frequently found to envelop the entire circles of teeth.

It collects with most persons; but principally on those parts of their teeth that are least disturbed by friction during mastication. The deficiency in this respect ought to be made up by the successful application of the tooth-brush. The tartar collects most on front teeth, as they are comparatively but little used except in simply cutting the softer portions of our food. The refinements of polished life have greatly encroached on even this forlorn hope of cleaning front teeth in a natural way; since the knife and fork are considered indispensable for dividing every portion of our food before subjecting it to the operations of the grinders. The arts of cookery in France, exceeding ours, have left little even for the grinders themselves to perform, and the state of our neighbours' teeth will, at any time, tell this tale of their gastronomic refinements. The effect of tartar is to inflame the gums, and to occasion absorption of the sockets of the teeth: hence the denuded, long-looking teeth, with exposed roots, that ultimately loosen and drop out. Follow the dictates of nature; masticate tough substances long and severely. In cleaning, pick your teeth with the tooth-brush as if your object and wish were to tear the gums from them: continue this practice night and morning, at least, until no bleeding accompanies the operation. Rinse your mouth with abundance of water at that temperature which you can use freely in every part of your mouth without inconvenience; the colder it is without inflicting pain, so much the more strengthening. A little spirit in the water, or say two or three drops on the wet tooth-brush, will assist the process of cleansing and leave a comfortable feeling in the mouth.

CHAPTER IV.

FOURTH ERA IN TEETHING.

FROM EIGHTEEN TO TWENTY-FOUR YEARS OF AGE.

After a cessation of six years in teething, the fourth era is distinguished by the cutting of four additional grinders (the "wisdom teeth"), about eighteen years of age. They are placed the eighth and last tooth from the centre, in each side of both jaws, and complete the full complement of thirty-two adult, or permanent teeth.

24.—NUMBER, NAMES, AND CLASSES, &C., OF THE SECOND SET OF TEETH.

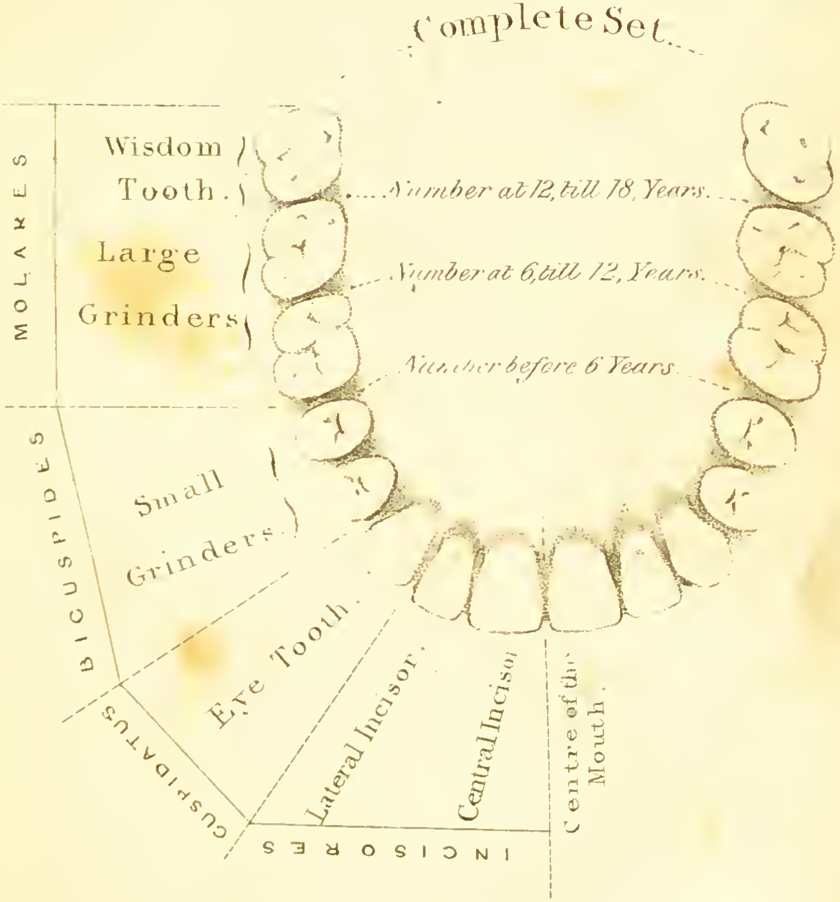
The set consists of twelve single, and twenty double teeth; the single teeth are the six in front of each jaw; the two next, on each side, are small grinders; the three beyond them every where, large grinders.

Reckoning from the centre of the mouth, the teeth of the second set are designated as follows: the two middle front teeth, in each jaw, central incisors; the second tooth in each side, a lateral incisor; the third tooth, an eye-tooth (canine, cuspidatus, tusk); the fourth and fifth teeth, small grinders (bicuspides); the sixth, seventh, and eighth, large grinders (molares), the last of which is also called the wisdom tooth (dens sapientiæ).

The annexed Plate will further elucidate the state of the mouth at this age, exhibiting both the names of the teeth, and the periods of their appearance.

It will be recollected that before six years of age there was not room in the mouth for the development of more than twenty teeth, and that it always required a further period of six years for the jaws to expand sufficiently in order to receive an additional tooth at each end, until the completion of the second set; and all this without reference to the changes taking place in front of the mouth, where twenty teeth have been shed, and their places supplied with successors, during the second era in teething. It will likewise be necessary to bear in mind that, during all these years, the jaws have been, like the other bones, in a state of progressive growth, while the teeth themselves underwent no change whatever, from the time of their protrusion from the gums.

Upper Jaw.



ADULT MOUTH.

Rogers sc.

Printed by Graf & Soret

25.—CUTTING THE "WISDOM TEETH" WITH PAIN, &C.

At this important era in teething, the cutting of the wisdom teeth is frequently attended with much inconvenience; more so than at any other of the four periods of teething, except the first. But for the greater strength of the parties at this age, many would sink under the process of teething, and yet not be aware of the source of their uneasiness. The wisdom teeth sometimes occupy years in making their way into view; they have been known to cut the gums so late as at fifty years of age. The cause of pain in cutting these teeth is in general from want of room in the jaws; at times it is no more than the pressure of the rising teeth against the gums. In this latter case, to cut down freely upon the new tooth, as often as may be required, will afford certain relief; but when there is not sufficient room for them, it may be advisable in bad cases to remove the "twelve years old" grinders, into whose places the new teeth will readily advance. What is best to be done must depend much on the previous treatment of the mouth; for if the "six years old teeth" have already been extracted, it would be injurious to remove any more, as in that case too much work would thereby be thrown upon the front teeth. Front teeth in one jaw should never be permitted forcibly to touch those of the other; for that pressure will either waste or displace them.

26.—REGULATING THE TEETH AS AN ENTIRE SET.

In regulating teeth at this age, we have to consider, first, their general appearance as to regularity in the dental circle; and, second, the state of preservation of each individual tooth.

Teeth are regular when, as a row, they form a perfect segment of some circular figure, generally that of a horse-shoe. The mouth is said to be regular when there is an equal number of teeth in each jaw, the teeth being likewise regular, and the upper row shutting outside the under-jaw. Regular teeth are in actual contact with one another throughout the entire row. When not in contact they do not look so handsome, perhaps, but they are freer from the danger of becoming diseased; and the more closely they press against one another in the row, so much greater is their danger.

Irregularity in a row of teeth may sometimes be the natural effect of a jaw stinted in its growth ; it is too commonly the effect of premature extraction of the primary teeth ; and not unfrequently the effect of habit—as when a person musingly uses his tongue in a particular way, or twists his mouth, or grinds the teeth during sleep. Instances are to be met with, of jaws being dislocated under the influence of acute pain, so as not to meet evenly as before, without filing down the prominent points which now meet their opponents in unusual situations. By some trick or play of the mouth, some teeth are greatly ground down, while others are loosened and ejected. This state of affairs is first indicated by the chipping of the cutting edges, or by pain and abscess in the gum over the root of the irritated tooth. A little care, and in some cases a gag of peculiar construction, will obviate the evil, if had recourse to early.

Irregularity of the mouth is produced by the extraction of teeth from one side of a jaw, while the corresponding ones are permitted to remain in the other; or by extraction from one jaw and not from the other; for be it always remembered, that teeth are formed in double pairs, two above and two below. By pairs, are meant the teeth that are equidistant from the centre of the mouth in both jaws.

They always come into view about the same time, and are alike in form as well as the circumstances in which they are placed.

In cases where there is a predisposition to a projecting chin, the removal of a tooth from each side of the under-jaw may still diminish the circle so much as to allow the upper teeth to meet on the outside of the under row ; or, at all events, to improve the appearance. If the removal of one tooth should be thought sufficient, that one ought to be an under incisor. Its absence would not be perceived, owing to the similarity in shape, size, &c., of the lower incisors. One tooth from the upper-jaw occasions a degree of irregularity that cannot be concealed.

Our next subject for consideration is the state of the individual teeth. If they be all quite sound, and one or more is to be extracted, we have only to consider which would best answer the object in view according to the above rules. If, however, any of them be unsound, it is advisable to remove those in preference to others; and, however difficult it may prove, we ought to endeavour to force the remaining ones into the desired place in the row. It is quite incredible how much can be done in this way by art, owing to the very yielding nature of the jaw-bones.

It may happen that the teeth are honeycombed in front; if so, the time has now arrived when the file may, with impunity, be applied to beautify and improve them. It is high time to lay aside the idle delusion of danger accruing from filing teeth. No teeth, nor part of a tooth, whether bone or enamel, will ever decay if kept perfectly clean and polished. If the double teeth should now be found imperfect in structure, whether from ailment, accident, or family conformation, it is advisable to carve out incipient decay, and stop up the vacancy with gold or tin leaf, according to the rules laid down in the succeeding chapters. Should the teeth be found to press greatly against each other in the dental circles, and that concealed decay is beginning to be indicated by the darkening appearance of the teeth at the points of lateral contact, it is better at once to rasp or cut out an opening, and in such form as shall render it easy to keep the part clean for the future;—a mode of treatment more fully explained in the following chapters, which treat of the causes of decay, and their remedies.

CHAPTER V.

INTRODUCTORY REMARKS

ON THE PRINCIPAL CAUSES OF DECAY.

The preceding chapters of the present Treatise contain a continuous description of dentition from early infancy to its completion at upwards of twenty years of age, with plain directions for the management of the teeth at every stage of their development. In the succeeding ones it is proposed to present the reader with a view of the perfect mouth, explaining the causes and progress of decay, with directions for the management and preservation of the teeth during the remainder of life, and the measures to be adopted under every variety of circumstance, whether natural or accidental. It will be necessary, however, to take a general view of the subject before dividing it under the proper heads.

While the laws of nature in every department of the material universe have been successfully investigated, it is surprising how little has yet been done in a branch of anatomy immediately connected with the comfort and convenience of every individual member of society. It is unnecessary to insist on the great importance of the human teeth : the pains attendant on teething, and their decay, are equally proverbial. Although gradual and near approaches towards a full exposition of their nature have been already made in the dissertations that have appeared from time to time on the teeth, the Author trusts he will not fall under the imputation of illiberality, if he takes leave to assert, that uncertainty continues to hang over the subject, and that a comprehensive system, grounded on satisfactory and consistent principles, is still a desideratum.

Perhaps no prejudice retains so powerful a hold on the public mind as the prevalent impression that the teeth are influenced by some mysterious agency, which baffles all attempts to allay, much more to obviate, their diseases. Most persons have, at one period or other of their lives, experienced such diseases; but they have been accustomed to look on them as evils inseparable from humanity, and have patiently witnessed their approach, and borne their effects, till, impelled by intolerable pain, they have sought professional skill, not so much from a principle of hope, as of desperation.

Every analogous instance, however, of the providence of the great Author of Nature, discountenances the supposition that he forms imperfectly so important a branch of the animal economy as the teeth;—notwithstanding this, even professional men have so far fallen in with received opinion, as to consider *original imperfection of design* the great source of dental decay.

Led to conclude that the teeth are intended to last for life; that they are regulated by simple laws; and their loss originates in definite causes within the reach of a counteracting process; it has been the object of the Author, by long and studious attention to the appearances of the teeth in the various stages of decay, to ascertain the source of their diseases, and on correct principles to provide the proper remedies. He trusts he may indulge the idea that his observations will avail much in removing the discouraging notion that dental disorders are hopeless and hereditary; and also that the principles he advances will go far to preserve instruments so essential to the health, the comfort, and well-being of mankind.

27.—ALL DECAY COMMENCES EXTERNALLY.

The ground-work of his system is, that caries, or decay of the teeth, in every instance commences externally; and that remedies externally applied will arrest, if not prevent it altogether; also, that although disease originates in this manner, it does not do so indiscriminately at any part of the surface of a tooth, nor at the apparently corresponding parts of an individual set, but at points common to the teeth of the same denomination in all mankind, where, from their natural shape, or accidental peculiarity, the morbid action necessarily commences. In an individual set, disease generally attacks the tooth, in each side of the same jaw, that is equi-distant from the centre of the mouth; or in pairs; and from similar causes, viz., their shape, and the circumstances in which they are placed at every stage of their existence being the same. Perhaps it might be more proper to say that they decay in double pairs, the same rule being equally applicable to the corresponding teeth of the upper and lower jaws.

As disease is known to prevail notwithstanding the utmost attention to cleanliness, it can only be satisfactorily accounted for from the shape of the teeth, for decay always commences in parts that are inaccessible to the ordinary and daily processes of cleaning; the very attempt, however, will always protract the period of decay.

In general it may be presumed that the saliva in a pure state is not calculated to injure the teeth; such portions, therefore, of the enamel as are exposed to its newly-formed supplies are seldom affected; and indeed we consequently never find the commencement of decay in the more prominent parts of teeth. Even the bony substance, when left unprotected, on the removal of the enamel by filing, being broken off, or when worn down by attrition, when its surface has admitted of being kept clean, is known to continue sound for years, though of course less calculated than the enamel to resist decomposition. Sooner or later, however, such tooth will absorb sufficient moisture from without to change and darken in colour, which, from the transparency of the enamel, itself unchanged, gradually becomes perceptible.

In the indentations and lines that are natural to the surfaces of the double teeth or grinders, the juices of the mouth there become stagnant, their properties change, and they exert a pernicious influence, aided by putrifying particles of alimentary substances, which likewise necessarily lodge there. "By a chemical agency on those relics of the food which accidentally lodge between them, a deleterious change takes place, constituting an active poison, which corrodes their structure."* Should this deleterious matter be left undisturbed, like stagnant filth, it acquires additional virulence, as the breath of many persons will abundantly testify; for the breath is oftener affected by the state of the mouth than that of the stomach—the former being of a permanent, while the latter is of a temporary character. The difference between the two causes may be ascertained by shutting the mouth and breathing only through the nose. If, however, after removing the tartar, the teeth be daily and efficiently subjected to the tooth-brush, previously dipped in an antiputrescent wash, the noxious influence of their decay will be less perceptible. The causes of decay will therefore be considered under the following heads:

---

* L. S. Parmly.

1. The shape of the double teeth.

2. Lateral pressure, from a too small or imperfect development of the jaws.

3. The receding of the gums and other accidental circumstances to which teeth are liable.

CHAPTER VI.

ON THE CAUSES OF DECAY.

28.—SHAPE OF THE DOUBLE TEETH.

In order to understand this, let us present the reader with an enumeration of a complete set of teeth.

The full complement, or second set of teeth, consists of thirty-two, sixteen in each jaw. Of these, the six front teeth in each jaw are single, their shape being not unlike that of a wedge, and each having but one root. The other ten teeth in each jaw are double, and consist of large and small grinders. The small grinders have two roots each in the upper-jaw, and but one in the lower. The large grinders have three roots each in the upper-jaw, while in the lower-jaw they have but two. According to the number of roots of a tooth, so are its cutting or grinding edges. It would seem as if from each root sprung a separate crown or body — the part which is visible in the mouth. This part of a tooth is always covered with enamel. On the body of a single tooth, the enamel is generally smooth and unbroken, having no line or indentation to retain alimentary particles. The almost only exception from this rule is, an occasional crack or imperfection in the coating of the lateral incisors of the upper-jaw, which takes place within the mouth on the posterior surfaces, and whenever it occurs, decay is sure to commence. This is always one of the points of observation with a skilful dentist. The teeth with two roots have somewhat the appearance of two heads joined together. Their enamel is frequently imperfect at the lines of junction, perhaps from want of constitutional vigour at the time of its deposition within the jaw. In these lines, sooner or later, decay is sure to commence. It occurs most frequently in the small upper grinders—the fourth and fifth tooth in each side from the centre of the mouth. In these the imperfection is invariably on the grinding surface, where tooth meets tooth in mastication. When decay commences any where else in small grinders, it occurs from causes to be explained under the other heads which follow.

The large grinders have the appearance of three or four heads joined together; they are, on that account, more liable than the other teeth to originate decay from their shape. So imperfect is the enamel in the lines and indentations of the large grinders with most persons, that sweets and acids will affect them painfully on their first appearance above the gums — the bone not having as yet attained its utmost hardness for the protection of the nerves within.

Hunter describes the ossification of the teeth in the following words, but without any intention of accounting for caries: "Where the teeth begin to ossify at one point only, as in single fanged teeth, that ossification gradually advances till the tooth is entirely completed; but if there are more than one point of ossification, as in the grinders, according to the numbers of its points, each ossification increases till their bases come in contact with one another, and there all unite into one; after which they advance in growth as one ossification." The same celebrated writer had well-nigh solved the problem of caries in teeth, when he remarked that "this decay of the teeth does not seem to be so entirely the effect of accident as might be imagined;

for it sometimes takes place in them by pairs, in which case we may suppose it owing to an original cause coming into action at its stated time, the corresponding teeth being in pairs, with respect to the disease as well as to situation, shape, &c."

The following is the common description of the names and classification of the teeth, which is repeated here to avoid the necessity of reference.

The two front teeth in each jaw, central incisors.

The second tooth from the centre of the mouth in each side, lateral incisors.

The third tooth in each side from the centre, *cuspidati*, eye or dog teeth.

The fourth and fifth from the centre, *bicuspides*, small grinders.

The sixth, seventh, and eighth from the centre, *molares*, grinders, of which the one, every where the last in the mouth, is called the wisdom tooth. See plate of the mouth, page 66.

It may facilitate the present investigation to divide them into two classes only, incisors, and molares; the former have but a single root and crown each, the latter have two or more. The crown is the part of a tooth that protrudes beyond the gum; it is covered with enamel harder than bone, and in single teeth begins to ossify, as has already been explained from one point or cutting edge. In the second class, the crown begins to ossify at different points, like two or more single teeth; and we consequently find that the double teeth have a number of prominent points on their grinding surfaces, corresponding in some measure with the number of their real or apparent roots. These teeth resemble two or more single teeth tied together, with a coating of enamel spread almost equally over them. Where they unite, a furrow appears,—in some persons very deep, in others moderately so, or scarcely perceptible.

Indentations exist not only on the grinding surfaces, or parts of the double teeth where they meet those of the other jaw in mastication, but also on all their sides, from the gums towards those surfaces. Incipient decay makes its appearance by gradually darkening specks and lines in these indentations; and wherever such symptoms present themselves, a natural hollow will be found to exist. That these indentations, common to the double teeth, are occasioned, at the time of their first formation in the jaw, by the gradual approach of the various points of their ossification to each other, is proved by the appearance of two front teeth when they grow, as they sometimes do, united together.

The author has now in his possession an eye-tooth perfectly attached to a lateral incisor, having two distinctly marked crowns and roots, with their separate nerves, &c., and yet having but one socket, although they are as perfectly united as the component parts of the double teeth. A further proof may be found in the acknowledged fact, that double teeth, the elevated points of whose cutting edges diverge, have their roots more nearly approaching to each other within the jaws; while those whose edges approach each other, narrowing from the gum towards their grinding surfaces, have more diverging roots, and are consequently more difficult of extraction. It is deserving of remark, too, that in persons whose double teeth, from their favourable shape, are not liable to decay, their grinding surfaces will be found more even and unbroken, and consequently less capable of retaining moisture &c. long enough to become decomposed, than the teeth of those who lose them early: although the process of original construction in the manner just described, and an apparent joining of several parts, may be distinctly traced in every instance.

29.—SHAPE OF THE TEETH HEREDITARY.

The distinctive features of the teeth, like those of the face, run in families to remote generations. Where either parent has had exceptionable ones, such of the children as have them similarly formed, are similarly affected with caries, toothach, &c.; and if both parents have indifferent teeth, the children rarely escape, unless by the intervention of art. Hence it is that in many families some of its members never experience toothach, while others are its constant martyrs.

When the enamel has been accidentally broken off, or penetrated by the impure matter necessarily retained in the dark speck or line, and disease, in consequence of the action of the external air and moisture of the mouth has communicated with the softer or bony substance of a tooth, it advances rapidly, eating away the interior till the enamel, deprived of its usual support, gives way, and the cavity, thus gradually formed, is exposed. Nothing can be more deceitful than this species of decay, especially when between two teeth. Its commencement and progress requires the watchful attention of a practised eye; its consummation alone being in general the only proof calculated to awaken the suspicions of the sufferer.

One person's teeth will decay as much in a week as those of others during a whole year. A sound tooth, steeped in acid for a short period, will be deprived of its enamel, and its adhesive or cementing quality being totally destroyed, it is reduced to the state of soft chalk. On this principle may be reconciled the thousand and one contending opinions as to the cause of decay in teeth; for it is known that the stomach is a sort of laboratory, where, in civilized society, chemical experiments are being constantly tried. These experiments extend to the region of the teeth. Were it possible to keep every part of a tooth at all times perfectly clean, it is presumed that decay would be as slow to commence in the hollow as in the prominent parts. The reason why this species of decay never appears in front teeth is, that they have but single-pointed wedge-like shapes, on whose surfaces no indentations exist, as in the double teeth, for the lodgment and decomposition of food or moisture.

"It is often observed on the hollow parts of the grinding surface of the molares, and there looks like a crack filled with a very black substance. In the incisors, the disease usually begins pretty near the neck of the tooth."*

That the external form of the grinders, therefore, is a primary cause of decay, is further proved by the undeniable fact, that the teeth of healthy, are as liable to disease as those of unhealthy, individuals; teeth which are of a hard flinty texture, as those that are soft, delicate, or of a bad colour.

The natural shape of the incisors, properly the four front teeth in each jaw, and of the eye-teeth, which are situated as strong barriers between the single and double teeth, is, when in their most perfect state, favourable to their preservation, except against lateral pressure and foulness, to the former of which all the teeth of a set are of course equally liable; while the bicuspides, or, as they are called, two small grinders, in each side of the mouth, next beyond the eye-teeth, being formed each like two incisors or wedges joined together, are, from such shape, liable to decay in their grinding surfaces only; the furrow which lies between their double points readily retaining whatever it is in the moisture of the mouth that proves injurious. "Though this disease attacks all the teeth without distinction, yet it may be considered as a general rule that the grinding teeth more frequently suffer from this malady than the incisors and cuspidati; and that the bicuspides or small grinders, incisors, and cuspidati of the upper, are generally much more subject to caries than the same teeth in the under jaw. The large grinders are affected with this disease most commonly on the grinding surfaces, whereas the small grinders and front teeth generally suffer from it on those sides which are in contact with the adjoining teeth."*

---

* Hunter.

30.—DECAY NOT INTERNAL.

Were the commencement of caries internal, as many seem to think, it would assuredly manifest itself equally in all the teeth of a set, or at least in a sufficient number of instances to put the question at rest; but the author never met with a case where, after due scrutiny, he could justifiably think that it had commenced internally. On the contrary, in cases where the enamel has exhibited opacity or any other unnatural appearance, on being cut or filed, he has invariably come to wholesome enamel or bone, according to the stage at which the caries had arrived. However minute be the lines or indentations on the surfaces of carious teeth, and they are often so minute as not to admit the finest point, they will be found in such cases to have admitted moisture to the bony substance ; in the way that glass or china, when cracked, will no longer retain liquids, in some instances even before such crack or fracture can be perceived.

---

* Leonard Koecker.

The inquirer, however, will be gratified to find that such natural indentations always point, in the hands of the skilful, to an easy and a perfect remedy ; for if the incipient decay be cut out, and its place supplied with a plug sufficiently durable, and rendered perfectly air and water tight, such tooth will last during the remainder of life. Cleanliness, however, is of the very utmost importance ; also that the teeth be duly inspected, and on the first symptoms of decay be attended to.

It can be proved, by any dentist of experience, that an efficient metallic plug inserted in the natural defect of a grinder will last for a long life. "By stopping a tooth, it is rendered artificially sound again."* "In 1783 applied to me, James Runell,

---

* Fox.

Esq. On examining his mouth, I discovered a considerable decay in one of his large double under teeth, on the outside of the crown, or near the gums; and after relieving it, by brushing with a lotion and cleansing out the cavity, I stopped it with tinfoil. Mr. Runell lately informed me that the same stopping and tooth remain perfect and firm to this day (1825)."*

31.—DEAD TEETH.

There is one more trait connected with the decay of the teeth, from their superficial structure, extraordinary, but at the same time true. A dead tooth, like common ivory, would last in favourable circumstances for an unlimited period, which if artificially fastened, and used in the mouth, would become subject to the same laws as regulate the decay of living ones. In the case of a false or artificial tooth, pivoted or grafted on the root of another, if the enamel be entire, no decay of its substance will take place in the mouth, except where it is joined to the old stump; for however fine their junction, moisture gradually insinuates itself between, when the bone of the tooth becomes dark and soft, until at length the gold pivot begins to feel loose, both in the dead tooth artificially fixed, and in the stump to which it is attached. Should any flaw, such as old caries, or a cavity artificially formed, exist in the false tooth, it gradually passes through the usual stages of decay that proceed from the shapes of teeth. The same thing happens to artificial teeth formed from those of the sea-horse, or any other animal substance. "Artificial teeth composed of animal substance, or natural teeth which are artificially placed to supply accidental deficiencies, having no vital principle to resist the effects of the heat and moisture of the mouth, are affected with caries, similar in appearance to that which affects the living teeth."*

---

* Sigmond.

---

* Jos. Murphy.

CHAPTER VII.

ON THE CAUSES OF DECAY.

32.—LATERAL PRESSURE.

In the preceding chapter it was shown that the shape of the grinders, in most persons, rendered them liable to disease from their unavoidably retaining relics of food, which soon become impure in the mouth, and thereby acting deleteriously on the substance of the teeth themselves. If a person retain animal or vegetable substances in the mouth, rolling them about, they never become offensive, owing to their being so cleansed with the constantly flowing saliva; but if left sticking between two teeth, or in the hollow of a decayed tooth, they become offensive in an incredibly short time. What the shape of the grinders does for their decay, very close contact does for all the teeth of a set, whether they be weak or strong—whether their possessors be in good or in bad health. Twenty teeth of a set are thus liable to decay from their shape, the nature of our food requiring so much less of their services in a civilized than in a rude state, while the other twelve can only become diseased from severe contact with one another. In the grinders, chemical decomposition commences in the lines and indentations natural to their surfaces from acidity. The same result takes place in front teeth, commencing at their points of contact, where no cleansing process can ever reach, until a separation is effected, either by filing or cutting, or by the removal of one of the teeth. All the teeth of a set are liable to this decay from contact.

It may then be remarked generally, that teeth when in close contact in a jaw, are much more liable to decay laterally, where they touch each other, than those that do not come in contact. Perhaps it would be difficult to instance a case of lateral decay where the teeth do not touch. When the disproportion between a jaw and its teeth is so great that the latter can scarcely find room in the natural dental circle, their consequent pressure against each other proves injurious; partly by cracking the unyielding flinty substance of the enamel, and thereby subjecting it to the admission of moisture; and partly by diminishing the internal free supply of nourishment to the tooth at that part, or pressing out its glutinous or cementing principle, for enamel does not always attain its utmost hardness even on cutting the gum; and perhaps principally by forming a rallying-point for the irremediable lodgment of impurities, as in natural indentations of the double teeth. Whether all or any of the causes here assigned be the real source of caries or not, certain it is that crowded teeth decay in this manner. This deduction is strengthened by the fact, that where the disproportion between the teeth and jaws is so very great as to force a sufficient number of the former completely out of their proper circle, producing the appearance of supernumerary teeth, and preventing their pressing against each other, no such decay is ever found. In all cases of caries, when disease has once commenced, however minute be its first appearance, it rapidly spreads. All writers on the teeth, especially medical men, contend that caries commences internally, and yet the great Hunter supports the opinions of the author, viz., that caries always commences externally. "We can observe in those teeth where the disease has not gone deep, that from the black speck externally there is a gradual decay, or alteration leading to the cavity within the tooth, and becoming fainter and fainter."

In treating of caries from their natural shape, it has been emphatically stated that only the double teeth suffer in the first instance, and that the peculiar shape and smooth surface of the front teeth render them less obnoxious to this species of decay. "The incisors are often destroyed by caries: it generally commences on the sides, and this happens most frequently where they are irregular, or pressed very closely together for want of room."* It becomes then especially deserving of remark, that all the teeth of a set are liable to decay from lateral pressure, although not in the same degree. The unfortunate double teeth, on their appearance, are, from their square compact shapes, less capable of quitting the dental circle. "The fore teeth in the lower jaw appear to be less subject to this disease than any of the others: the fore teeth in the upper-jaw, and the grinders in both, are of course more frequently affected."* Hence we find, that although naturally supposed to be stronger than the front teeth, they are in reality more liable to every species of decay: the front ones, from their thin elegant shapes, and the yielding nature of their alveolar processes, or bony sockets, readily slide past one another, and are consequently freer from lateral pressure. The front teeth of the upper jaw are more subject to caries from this pressure than those of the under, from their more delicate structure.

---

* Jos. Murphy.

It may here be remarked that lateral pressure, so sure a source of decay, is often induced by mismanagement; and perhaps it may be added, that this observation applies more to those classes of society for whom too much rather than too little has been attempted by the dentist; as irregularities are, from premature extraction of the shedding teeth, more frequently met with in high than in humble life.* Sometimes, however, the jaws are too diminutive to contain their full complement of teeth, in which case a judicious thinning of their numbers would certainly prevent lateral pressure; but before having recourse to so unnatural a remedy, as a permanent tooth once extracted cannot be restored, due allowance must be made for the age and probable enlargement of the jaw. The principle only applies to the permanent set of teeth. A more desirable practice would be to enlarge the whole dental circle of the jaw, by the temporary use of an elastic metallic plate, formed to a model of the mouth, as is usually done to regulate the the direction of young persons' front teeth, when they grow irregularly.

---

* Hunter.

Disproportion between the teeth and jaws may be occasioned by a natural conformation of the parts, or it may be the unnoticed effect of accident; for we seldom find any such disproportion, and consequent irregularity, in the arrangement of the teeth of men, when, like inferior animals, in a state of nature. "In the teeth of all animals in a state of nature, we discover no diseased structure or deformity, and therefore we must ascribe it in the human subject to *fortuitous*, not *constitutional*, or hereditary causes; for that they are less destructible than any part of the frame is evident, since in places where bodies have lain for centuries, teeth are found entire and sound, while the other bones crumble to dust."* The size and form of the teeth, like those of the body, being in a great measure hereditary, may possibly be regulated by a different law from that of the jaws themselves. The former, when first completely formed, are of the fullest dimensions they can ever attain, while the size and form of the jaws are controlled by the accidents of life, which not unfrequently interfere with the original design of nature; as in the case of maimed, deformed, and rickety persons.

---

* See page 32 of this Treatise.

---

* Parmly.

It cannot be too strongly urged, that where, by the first intention, the teeth and jaws are in just proportion to each other, if a tooth be extracted before the jaw has attained its full growth, or, if a shedding one, before the new tooth is ready to supply its place, the adjoining ones will approach each other, filling up the space, until there is little or no room for a permanent tooth instead of the one extracted.

With reference to decay by pairs, we may here repeat that teeth generally grow in that manner, and are consequently subject to the same degree of lateral pressure, from their similarity of shape and situation. This is proved by watching and plugging a faulty tooth in one side of the mouth, leaving the corresponding one on the other side to its fate, which will inevitably be removed by gradual decay, or by the dentist.

Caries from lateral pressure in general makes its first appearance in the shape of a small darkening speck, at the point where two teeth are in severe contact; hence the prevalent observation that the decay of one affects another. Although this is literally correct, the opinions that prevail respecting the cause and manner of such affections, are extremely vague and erroneous; for disease in one tooth affects not another unless the carious portion, with its diseased contents, be in actual and continued contact with the adjoining tooth. This speck gradually enlarges, as the enamel becomes decomposed by the agency of the impure matter which constantly lodges there: it also makes its way to the bone, which, from exposure to air and moisture, soon becomes soft and spongy, and is consequently well adapted for retaining the noxious principle that destroys teeth.

Teeth thus situated begin, thermometer-like, to indicate the changes of the weather, and to be affected on the application of heat and cold.

The caries, meanwhile, gains ground; and not unfrequently, before any external appearance would indicate decay, the whole bony substance has disappeared in filthy fluid. It may be years before any serious injury is discovered, although pain may be frequently felt.[*] In consequence of which, while only chewing a hard biscuit, or cracking a nut, &c., the thin, and apparently unbroken shell of enamel, often gives way and breaks down.

Decay from lateral pressure, like that from the natural shape of a tooth, is equally common to shedding as it is to permanent teeth, to strong as to weak ones; to those of persons who enjoy the most perfect health, as to those who are sickly; and moreover, to every tooth in an over-crowded set, which it is presumed would not be the case were the commencement of caries internal, and were the disease itself, rather than its cause, hereditary. On the removal of any tooth that has decayed from lateral pressure, black specks, or a more forward state of disease, is invariably to be seen in the adjoining teeth, at the points where it was in contact with them. If the faulty tooth be removed before these specks have become soft, the tooth, now within the reach of the usual cleansing processes, will remain sound for life; but if the dark specks have become soft, it is better to remove and cleanse them, and plug the teeth in the usual way. It cannot then be too generally known that teeth, which would be lost from lateral pressure, saving where difficulties insuperable from situation or shape present themselves, may be preserved by filing, cutting, and cleansing, to be treated of in its proper place.

---

[*] I. L. Levison.

CHAPTER VIII.

ACCIDENTAL CAUSES OF DECAY.

Having already examined the two primary causes of decay in teeth, the first proceeding more especially from the shape of the grinders, and the second from lateral pressure of all the teeth of a set against each other, it remains to attempt some description of the third or remaining class of diseases.

It may not be out of place here to remark that the bony substance of teeth, although, next to their enamel, the hardest in the animal economy, is particularly liable to decay when subjected to the vicissitudes of moist and dry, cold and heat, independently even of the chemical changes that necessarily take place in the mouth. The gastric juice is known to act rapidly on substances subjected to its influence, and by separating their component parts, changes their very nature, and prepares them to return the more readily to their original elements. The juices of the mouth, influenced perpetually by the state of the stomach, in like manner affect the teeth, which, in reference to external agency, may not inaptly be considered in the light of a dead substance.

All acids occasion injury to the teeth, in so far as they dissolve and separate the component parts of their enamel. This is the only plausible reason hitherto offered for that peculiar decay called denudation. "The cause of this disease is simply a want of proper management in cleaning the teeth, from an early period of life; and also the too frequent use of the daily advertised nostrums for the teeth and gums, which very generally contain some deleterious ingredient. They are used under various forms, such as tooth-pastes, electuaries, tooth-powders for bleaching the teeth white, &c."*

In eating fruit, a certain and well known sensation in the teeth calls attention to the chemical influence of even the small portion of acid it contains. In many instances, when we are unconscious of the cause, other and similar bad effects are produced. In chewing hard substances, as when a stone concealed in food is forcibly bit, a thrilling sensation is produced, which gradually wears off; but which, in some instances, leaves indelible injury behind; perhaps the enamel has been cracked or splintered, when the tooth will become the victim of the class of diseases first described; or a piece of the tooth may have separated, leaving the bony substance exposed; or the lining membrane of the socket may have been so much injured as to become inflamed and disunited. The tooth thus deprived of the lining membrane of its socket, the natural medium of union between the teeth and jaws, becomes in a manner dead, as its altered colour and looseness will readily indicate; while the socket itself is at the same time absorbed. The same thing frequently occurs to the front teeth, when struck a violent blow. They often remain for years in the head, but dead, and discoloured.

---

* Sigmond.

Clammy and gummy substances, as sugar, although innocent in themselves, frequently injure the teeth by their adhesiveness, and the readiness with which they seize on and retain acids and other injurious substances, or themselves become acid. Discoloured specks, even in their more prominent parts, may be produced in this way; for if you wash a tooth with strong acid, it will whiten at the time, but become discoloured for ever after.

The teeth are formed in pairs that correspond with one another, as the right hand with the left. If a line, indentation, or mark, be found in one tooth, a similar peculiarity may reasonably be looked for in its fellow, in the other side of the same jaw. This, as well as the space between the teeth and gums, round their whole necks, retains food and moisture, which not unfrequently occasions the loss of the double teeth of the most pains-taking persons, in those parts of the mouth where the influence of the brush cannot be rendered efficient, or where the tongue does not conveniently reach.

In conclusion on this head, it may be remarked with truth that, unlike caries from the shape of the teeth, or from their pressure against each other in the same jaw, the elements of which no human foresight can prevent, it is in every other possible form the result of ignorance or laziness.

CHAPTER IX

OF THE GUMS.

The gums may always be considered healthy when they do not readily bleed under the operations of a good tooth-brush skilfully applied; while, on the other hand, any part of the gum that bleeds during mastication, or under the tooth brush, must be considered out of health. The remedy in all cases is simple, and easy of application. Many persons require to be taught how to brush their teeth, as they are taught writing, or any other art. Others are naturally ingenious, and soon find out the way for themselves. The gums of healthy persons cannot be unhealthy, that is, spongy, or, as it is erroneously called, scorbutic, in every part of the mouth at the same time. The gums in the back part of the mouth of a person who masticates food vigorously, may look as clean and sweet as the mouth of a dog or other animal who has to tug hard for his sustenance, while in front they may be on the very border of putridity. This would not be the case if scurvy were the cause, as that would pervade every part of a mouth equally, as is the case during fever or other severe illness, or where the system is under the influence of mercury, &c.

A disease of the gums may be local, that is, in the close vicinity of a particular tooth, or fragment of one; or it may be general, or common to all the teeth of one or both jaws. If the disease of the gum be local, and the tooth sound, it will be found incrusted with tartar, which has forced the gum away from the tooth; and acting as a foreign substance on a fleshy sore, has produced inflammation, and a consequently diseased appearance at the part: or if the disease be general in the mouth, the same cause will be found to have produced it. A disease of the gum, however, may be local, and the rest of the mouth in the enjoyment of perfect health; as, when a carious tooth or stump, from the facility it affords to cold, or other exciting causes to enter the gums and sockets, has produced inflammation of the lining membrane, with a formation of matter which has burst through the bony socket and gum near the point of the root. In this form, a disease of the gum is called a gumboil, and may speedily be made to cease by the removal of the offender. It might, however, if permitted to remain, after a little time exhaust itself, and cease altogether, when the tooth or root, which was the exciting cause, will remain as a dead body in the jaw; sometimes harmless, and at times occasioning returns of gumboils, swelled face, accompanied with pain all over the same side of the head, and even in the ear, neck, shoulder, &c. A local disease of the gum may also assume the shape of a fungus, which would require the repeated efforts of the most experienced surgeons to eradicate, for it will form again and again, like a corn. It may even assume the form and nature of cancer, unless skilfully treated. Cancer thus generated in the gum, or in the tongue, from continued irritation occasioned by a pointed broken tooth, is not an absolutely uncommon cause of death.

Abscesses of a more serious nature, and diseases in the bones of the face, are often occasioned by diseased teeth, which appear to the patient to be merely diseases of the gums. So far, then, diseases of the gums seem to be altogether produced by diseased teeth, and are therefore properly enough described along with the diseases of the teeth.

In some rare instances, diseases commence at the roots of teeth apparently sound, for which there can be no remedy but the radical one of extraction: but in general, diseases of the gums may be altogether prevented by keeping the teeth clean. The cleanliness here meant is not that appearance of the teeth in front which most persons now feel a desire to possess, but an absolute absence of all foreign accretions; whether of a very hard kind, concealed, or nearly so, under the gum, or, in a soft state, lodging on the gum all round the necks of the teeth, and more especially in the back part of the mouth. This state may be prevented by the skilful use of tooth-brushes, or removed by scaling instruments, at almost any period; unless the bony socket has been entirely absorbed.

Gums that are healthy are all of one colour, and do not bleed when touched; those that are unhealthy have a reddish rim in contact with the teeth, and bleed readily when touched with the finger or tooth-brush, or when sucked. This state of the gums may arrive at such a stage as to loosen the teeth. With the exception of gumboils, funguses, &c., and even these may be much mitigated, severe brushing and friction of the fingers will, in almost the worst cases, restore the gums to health in a very few days. Whoever has spongy gums may, if he can bear the pain, fearlessly brush and even scrape severely his gums until they cease to bleed—the only just criterion of restored health.

The gums, however, may be painful when not diseased, and that in the mouths of the most careful individuals. This happens in general to the front teeth, and from the absence of all or a certain number of the double teeth. It will readily be understood how, in absence of the double teeth, an unusual pressure falls on the front or single ones. Every time the mouth is shut, the front teeth of the under jaw, rubbing forcibly against those of the upper, grind them down, by attrition, or force them from their places. The proper remedy for this state of affairs is to fill up, by artificial means, the ravages of time, of heedlessness, and tooth-drawing, thereby restoring, in a great degree and in the proper quarter, the usual organs of mastication.

The gums forsake the teeth to a certain extent in the mouths of many careful persons, but if all besides be right, this need not annoy them much, as it is only a slight diminution of the bony sockets, the gums retiring, but not wasting. It may be a constitutional defect, or the result of medicines; but in either case is not dangerous nor worthy of exciting any uneasiness.

CHAPTER X.

ON PRESERVING THE TEETH

BY BRUSHING, SCALING, AND POLISHING.

33.—BRUSHING THE TEETH.—It has been shown that foulness will breed diseases of the gums and their sockets, as well as of the teeth themselves. Foulness is produced by the relics of food retained in and about the teeth, and by a deposition of sediment from the saliva. This deposition is never to be found on the prominent parts of teeth which are brushed by the food and tongue in mastication; but in lines and indentations on the surfaces of many persons' teeth, and between and around the necks of teeth deserted by the gums, for teeth are wider at their grinding surfaces than nearer the gums. In a perfect mouth, no lodgement ever takes place, nor is there occasion for a toothpick.

The sediment that forms tartar, the greatest enemy of the mouth, is soft at first, and might easily be removed with a tooth-brush, if successfully employed night and morning, or at all events once a day.

From the shape and arrangement of the teeth in the jaws of some persons, it is not easy to clean them at every part, but more especially at the necks of the molares. In a very small mouth you never can, with the ordinary tooth-brush, clean the inside completely. In brushing across the teeth, you only touch their most prominent parts. The most certain method is to brush up and down; perhaps the best way of all is to brush with a downward touch, picking between the teeth lightly, with the prickly points of a patent or penetrating tooth-brush, cutting the gums at each stroke of the brush. The same touch when applied to the lower-jaw, would seem to tear away the gums. This, however, it never can do. If the gums bleed, you are to persevere the more in brushing, night and morning, until you no longer extract any, which alone is the true sign of their restoration to health. This method of brushing is, after all, only following nature; for does not the action of food perform the same operation. The tougher the food, and the more it is masticated, so much the more healthy are the teeth and gums. In the mouths of animals that tug and gnaw their food, the gums and teeth are always clean and healthy. It is a mistake to fancy that you can brush away the gums. You are to imagine the gums to be a thick skin, covering the bone which forms the sockets of teeth. This bone is very easily absorbed. When the constitution is affected with medicine to salivation, the gums are sore and spongy; but it is the bone that suffers permanently. It is absorbed, and for ever, while the gum is restored to health by severe friction. Before the administration of mercury was properly understood, the jaw-bones and roof of the mouth suffered injury from its use, more readily than even the other bones. There are now few instances of destroyed palates to be met with—thanks to science.

34.—LOTIONS, POWDERS, AND BRUSHES.

It is desirable that all mystery should be removed from the management of the teeth, and that society should look upon them as mere specimens of art, so far as regards their cleanliness, and the mode of effecting it; for their vital functions, like those of the general system, are, fortunately for us, attended to by a principle that never neglects them.

Of lotions, it may be remarked generally, that they are intended to stimulate the parts when languid to a new and more healthy action. The groundwork of all lotions for the mouth is spirit of wine, modified by various admixtures: nothing however appears superior to the spirit itself, which may be sufficiently diluted by pouring a few drops on the tooth-brush when wet.

As the composition of tooth-powders should be no secret to those who use them, they ought to know, that powders mixed with acids act chemically and decompose the enamel, and consequently subject the teeth to early decay; and that gritty powders act mechanically, and waste them. Charcoal, bole, and many other substances, may be used with safety for their antiseptic qualities; but those that are of a dark hue often enter the vessels of the gums, and change their colour, without any adepuate advantage. "Armenian bole forms, like all argillaceous earths, a good tooth-powder, when mixed with some aromatic."*

A safe medium may be found in prepared chalk and powdered cuttle-fish, which can never hurt; but in general, a good tooth-brush, well applied with clean water, will be found to answer almost every purpose.

As to the degree of hardness requisite for a tooth-brush, it may be observed, that a hard one will soonest cure tender gums; but, as the process may be painful, a soft one can be used until the gums gradually become prepared to endure the other.

35.—TARTAR.

The most common cause of the receding of the gums is tartar, which acquires a stony hardness on the teeth.

"All our juices contain a considerable quantity of calcareous earth, which is dissolved in them, and which is separated from them upon exposure, which continues mixed with the mucus; so that the extraneous matter consists of earth and the common secreted mucus."*

---

* Dr. Hooper.

"When it has increased so much as to touch the gum, it produces ulceration of that part, and a train of bad consequences. The gums, receding from this matter, become very tender, and subject to hemorrhage."†

All fair means therefore ought to be pursued, and a simple and reasonable plan adopted for keeping them clean. In order to do this effectually, it may be proper to bear in mind that the teeth are like beautiful pieces of ivory, with a highly polished glassy surface, so far at least as they are seen out of the gums; and that the same means would keep them clean as are daily resorted to for cleaning common ivory; with this great advantage, that their substance is of a much harder quality, and consequently less liable to injury from the mechanical friction of powders, &c.

---

* Hunter.

† Ibid.

The wet corner of a towel wrapped about the finger, so far as it went, would clean them tolerably well; and if a little prepared chalk, common whiting, or charcoal were to be added, the ivory would look the more clear and polished for the operation. But as the teeth, from their situation, are much in the same state as chased or carved work, inaccessible to the finger at some points, a tooth-brush will be found materially to aid the process, although it may not prove quite successful at every part of them.

36.—SCALING.

When the tartar or deposit around the teeth acquires consistency, scaling instruments are requisite to scrape it off; and although many persons object to this operation, it may be safely and repeatedly performed in the course of every year, during a long life. Another advantage, besides the preservation of the gums and sockets, accrues from this practice, namely, that at periodical examinations of the teeth the first commencement of disease is detected and checked. Attention may here be called to the fact that the crowns of teeth are covered with a flinty substance, that admits of being scraped and polished; while the remaining portion, or their necks and roots, are covered only with a skinny substance, periosteum, or lining membrane, as it is called, of the socket. It is obvious, then, that the same process that polishes and improves the one may utterly destroy the other. This may sometimes account for denudation of the fangs, or forsaking of the gums. Let it never be forgotten, however, that undisturbed tartar more frequently and more certainly produces this effect. Once denuded of the periosteum or membrane, here meant, the exposed fangs must be kept very clean, or they soon absorb external moisture, become discoloured, and affected by disease.

The prejudice advanced against scaling the teeth, owes its existence chiefly to the improper modes adopted by some operators, who, through ignorance or carelessness, not only fracture the enamel, but apply an acid under the disguise of a dentifrice, which dissolves it together with the tartar. "All acids, gritty powders, and injudicious methods of scaling the teeth, are prejudicial; but simply scaling the teeth, that is, clearing them of the stony concretions, which frequently collect about their necks, while nothing is scraped off but that adventitious substance, is proper and useful."* The surfaces of the teeth when perfectly clean, and free from foreign accretions, have an even, smooth surface, and consequently oppose no resistance to the easy play of sharp scaling instruments at any part of them. This is the state in which well-regulated teeth ought always to be kept. The gums then adhere firmly to their necks. Let it here also again be impressed on the mind of the reader that even the most unhealthy gums, if the teeth are sound, may, by severe brushing only, in a very few days be perfectly recovered.

---

* Hunter.

This practice, for the cure of spongy gums, is superior to lancing, in so far as it is in the power of the patient to continue it daily until a cure is effected. When the gums become too tender for the tooth-brush, the finger and thumb ought to be employed repeatedly during the day, to press out blood or matter, when either is in excess, until they attain a perfectly healthy and comfortable state.

When the gums are sufficiently healthy, they do not readily bleed, and for them, then, that sort of brush may be used which is most agreeable.

The practitioner will meet with persons who say that they bestow much pains daily in brushing their teeth, but whose gums are nevertheless unhealthy, and whose teeth are dirty ; and who consequently instance their own cases, at least, as exceptions from the above rule. To such, a very few words in reply will be sufficient : they do not apply the tooth-brush successfully to every part of their gums and teeth ; as a proof of which, on examining the matter a little further, they will find that the more prominent parts of their teeth, which alone their efforts have reached, are sufficiently clean, and the more prominent parts of their gums healthy.

This is a point in the management of teeth on which not a few deceive themselves. Many persons will habitually apply the tooth-brush to their teeth after every meal, without success ; like the abortive, however industrious efforts of a child to wash clean its face. In the latter case, the eyes and natural hollows remain untouched by the cleansing element ; while in the former, the particles of food, decomposing in the intricate crannies and corners of the teeth and gums, remain undisturbed, until subjected to the periodical operations of the dentist; except on the grinding surfaces, where the natural process of mastication aids the cleanliness of teeth placed in untoward circumstances. It is a mere matter of taste, whether persons clean their teeth three times or only once a day; the whole mystery of the art being contained in the success with which the operation is performed.

37.—POLISHING.

It often happens that after the most indefatigable industry in cleaning teeth, dark shades and points will remain in parts difficult of access, as between two teeth. If a piece of stick, say the penny canes of the toy-shops, cut into convenient lengths, be employed in polishing the teeth, it will tend to harden and preserve them. Dragon roots are usually employed for this purpose. They are, however, little superior to the common tooth-brush, owing to the bushy thickness and softness of their fibres. The cane or common stick cut to a fine wedgelike point, renewed at pleasure, will reach almost the minutest cranny in and among the teeth. Cuttle-fish powder will much assist in the operation, or even pounded pumice may be used in moderation for the cleaning out of stains on teeth.

"Where the teeth are kept literally clean, no disease will ever be perceptible. Their structure will stand the changes of climate, the variations of diet, and even the diseases to which the other parts of the body may be subject from constitutional causes."*

* L. S. Parmly.

CHAPTER XI.

PRESERVING THE TEETH

BY PLUGGING, FILING, AND CUTTING.

38.—Plugging.—The reader who has taken the trouble to peruse the article "Shape of the Teeth, a Cause of Decay,"* will readily understand how it is possible, "by stopping, to render a tooth artificially sound again."† Hunter observes, that "If the rotten part be perfectly removed before it has arrived at the canal of the tooth, a stop is sometimes put to the further progress of the decay, at least for a time." Greater experience of the management of teeth would have convinced this eminent man that the operation of stopping, successfully performed, renders a tooth permanent, provided it is kept clean. Murphy, a dentist of experience, observes truly, that "The progress of disease is frequently stopped, and the tooth saved, by cleaning away as much as possible of the carious part, and stopping the hollow closely with prepared gold or tin, which excludes the air, and prevents foulness, or the pain and irritation occasioned by food lodging in it." And Koecker well observes, that "By the beautiful and useful operation of stopping or plugging teeth which are greatly injured by caries, they may be preserved for many years, in most instances during the remainder of life; and not unfrequently, from ten to twenty teeth may be preserved, by this operation, in the same individual." Sigmond gives the following instance of the efficacy of stopping teeth:—"A gentleman has just paid me a visit, who has been my patient since the age of eight. During one of his vacations, I saw some incipient disease, and stopped it: twenty years have elapsed, yet I found the same old stopping which I had inserted, in one of the large first double upper permanent teeth, and also in one of the large under double teeth. I have no hesitation in affirming this to be one of the most important and useful operations that can be performed." A sufficient argument for periodical inspections of the teeth will be found in the following paragraph of Fuller's:—"The commencement and progress of decay is so insensible, that it may exist many years, and even the person himself is often not aware of it till it has penetrated the very centre of the tooth; having reached the cavity, it there commands attention, on account of the severe toothach it occasions."

---

* Chapter VI.

† Fox.

Of the various operations required for preserving carious teeth, and thereby stopping the further progress of decay, plugging, therefore, takes the foremost place. This operation is variously performed, and appears to have been amongst the first undertaken by those persons who assumed the name of dentist. The author himself had an opportunity of curing the pain in, and afterwards plugging with gold, a carious and tender tooth, for one of our most celebrated professors of music:* a cavity in the other side of which tooth had been successfully stopped with tinfoil thirty-six years before, by the father of the celebrated actor Talma. He is also acquainted with the case of a well-known medical man in London, who has a serviceable tooth which was plugged forty-seven years ago.

To understand what is here meant by plugging, it is only necessary to refer to a leak; it may be permanently or temporarily stopped. If a plug be introduced without the complete removal of the rotten portion of the plank, the rot will still go on ; but if the entire disease be removed, and its place supplied with a healthy substitute, that part may prove the most lasting of the entire vessel. In like manner the affected portion of a tooth must be completely removed, and its place supplied with a plug that shall be harmless and lasting, while it can never be reached by the influence of external air or moisture.

---

* Cramer.

The substances most commonly used, being the best hitherto known for the purpose of stopping teeth, are gold and tin foil. The manner of performing it is to introduce the foil gradually with a blunt-pointed instrument, called a stopper, into the carious cavity, having previously cleansed out the caries. When the cavity is full, the foil is pressed into almost a solid state, by the continuous and forcible application of instruments, and is thus calculated perfectly to exclude atmospheric air and moisture.

Lead and tin in situations out of the reach of friction in mastication, as between two teeth, are like the teeth themselves, apt to be decomposed by acidity, unless kept very clean; but gold, being indestructible, will remain useful and permanent, provided it is so applied as that no external moisture or air can penetrate the tooth.

Platina is said to be equally effective; but it is better to adhere to the use of gold only, which cannot be mistaken for any other metal.

Many cases, however, occur where gold would prove insufficient. The cavity to be stopped may be deep and irregular; and gold, although soft and pliant at first, soon becomes so hard and immalleable by the pressure of the instruments, that no force which it is safe to apply, can thrust it home. If the slightest vacuum remain, the air and moisture will soon obtain admission, and occasion a renewal of the caries. This is easily avoided by first introducing tin or lead, which from their natural pliancy may be forced into the irregularities of the cavity in a tooth. Over this, gold stopping may be introduced as a finish, which will effectually prevent oxidation of the tinfoil, and thereby save the tooth.

Fusible metal is also used for stopping teeth; it was first used in this country by Mr. Fox. His description of it is as follows:

" A new method of stopping the teeth has been recommended to me by some chemical gentlemen. The composition for that purpose is made of bismuth, eight parts; lead, five parts; and tin, three parts; a heat of the temperature of boiling water is sufficient to melt it, hence it is called the fusible metal."

It requires but little knowledge, however, to understand that this preparation must ever be a very inefficient plug for teeth; inasmuch as metals in a fused state always expand, contracting as they cool, and thereby freely admitting external air and moisture. So far at least as regards the plugging of teeth, the truth of this will sooner or later become manifest to the patient, however he may at first have been duped by so specious an operation.

It is but justice to state that the leading London dentists, aware of the deceitful and injurious tendency of fusible metals, never condescended to have recourse to them, when in many cases they could have applied them with every appearance of success.

Another substance for plugging teeth has lately crept into use, and is daily advertised as superior to gold or any other material. It is, however, extremely injurious, and consists of an amalgamation of mercury with silver filings and other metals. It is applied in a soft state, and in the mouth gradually acquires that species of consistence and appearance which characterizes the refuse of smelted ores.

Individuals in the profession have used mercurial amalgams for years, under the designations of anodyne cement, mineral succedaneum, &c., pretending that they will allay pain, and permanently preserve carious teeth. In many cases of toothach, simply filling up the cavity with any substance that shall exclude cold, will allay pain, and this amalgam, as readily as any other substance. As it soon acquires a metallic hardness, if the tooth still remain free from pain, the patient is satisfied, until he discovers the tooth changing colour from the oxidation of the mercury. It is generally put into the cavity without being first cleaned out, in consequence of which the decay advances even more rapidly than before; and worse still, it is often applied between two diseased teeth, when the mass partly entering into the cavity in each tooth, and altogether filling up the space between them, it becomes very difficult of removal, which leads to dangerous consequences, when inflammation supervenes in consequence of the teeth not being duly prepared for stopping. The author dwells more particularly on this subject, as the evils attending the practice have often unwittingly been brought home to his door, although he never yet attempted to plug teeth, with a view to permanency, with any other metal except gold or tin, in the good old approved way; having previously prepared the teeth, if tender, with anodynes, on the same principle as a poultice applied to an ulcer any where else. See the next chapter, on the Cure of Toothach.

The first class of diseases in teeth, arising from their shape, is the most easily remedied by a plug; for in the grinding surfaces and sides of the double teeth, it is only necessary to drill and cut out the affected line or speck, and plug it at once with gold; but when the decay has originated in the side of a tooth from lateral pressure, the operation is more difficult. If the caries be between two teeth, an opening must be effected between them, either by the removal of one of them, or by other means, "such as filing and cutting, or a complete removal of the diseased parts of the bony structure by the file or other suitable cutting instrument, so as to produce a regular and plain sound surface of the tooth, by which health is preserved."

The operator is sometimes interrupted in opening between two teeth, by the objections of the patient, who insists on the injurious tendency of filing or cutting. This is indeed to die for the fear of death; as the uneven and broken surface of a carious tooth is thereby made even, and less capable of retaining foulness; added to which, even in the worst of cases, the smooth polished surface of the gold, or other plug, is in perfect contact with the enamel at every part of the cavity it fills, and thereby gives to such tooth a chance of safety, which, if left to itself, must soon have broken entirely down.

When the disease is between two teeth, each must have its own separate plug, with a space between, for the purposes of picking and otherwise cleaning the part. In conclusion on this head, the author has only recommended that on the slightest suspicion of a lateral decay existing between any two teeth, the patient will unhesitatingly and unflinchingly submit to the operation of separating them, and eradicating the disease.

When the caries is between two teeth at their necks near the gum, it is often impossible for the patient to endure the pain occasioned in cutting it out, or even the touch of instruments. In consequence of this, many teeth are lost which might be saved, were any substance applied to them which should have the effect of hardening the parts and deadening their sensibility. This is variously effected by different practitioners.

The use of any spirit, rubbed daily into the affected parts, hardens the substance of teeth, and in time deadens the sensibility even of those that are tender from filing, &c. If a little quickly-drying spirit varnish be used in addition, and, with cotton wool permitted to remain from time to time, it will be found to accelerate so desirable an object. Let it then be seriously impressed on the reader's mind, that if the carious part of a tooth be thoroughly cleansed and kept literally clean; or, if the cavity be too deep to be reached with a tooth-brush or a wooden toothpick, it be afterwards effectually plugged with gold or tin, it will last during the remainder of life.

CHAPTER XII.

OF TOOTHACH,

ITS CURE;—WITH CASES.

THERE is no complaint more general, or distressing in its nature, than toothach; nor one that has excited less attention with a view to its cure. This indifference is, perhaps, owing to the facility with which the cause of this pain may be removed, by extraction of the affected tooth; but which "is an operation that cannot fail justly to create some alarm, when the circumstances attending it are considered. There is, perhaps, a greater share of manual dexterity necessary in performing it than is generally imagined, to prevent fracturing that portion of the socket where the fang is situated; and if the alveolar process is uncommonly firm, and does not yield to the force of the instrument directed against it, the fracture will extend a considerable way into the jaw, and the effects of it may injure the patient for life. The operation is sometimes followed by a most dangerous hæmorrhage, which in many cases has defied every effort of the most experienced surgeons."*

Were pain the only evil attendant on carious teeth, some consolation might be found in the reflection that with their absence it would cease, especially as their loss could in a great measure be repaired by artificial means. Constituted as we are, however, the sufferings that many endure, from pain, want of rest, and of nourishment, before extraction is had recourse to, often reduce them to the lowest state of nervous and physical debility; and in many instances, lay the foundation of even more deplorable diseases.

---

* L. S. Parmly.

Many affections, which appear unaccountable, are found to proceed from diseased teeth, even when they are not particularly painful. "The influence of carious teeth is often very extensive; not only the face and parts adjacent, particularly the eyes and ears, but the whole head, neck, shoulders, even the arms, and the whole system becomes disordered by want of rest."*

When a tooth aches in one side of the jaw, not only the corresponding one in the other, but the whole class of teeth to which it belongs is liable to be affected in the same way, and nearly at the same time. On this account, if a tooth be extracted or plugged on account of pain, all the others of the same class ought to be attended to.

---

* Fuller.

Hunter observes that, "In all cases of diseased teeth, the pain is brought on by circumstances unconnected with the disease; as for instance, cold, wherefore they are more troublesome, &c. Extraneous matter entering the cavity, and touching the nerve and vessels, will also bring on the pain."

It thus happens that a diseased tooth may moulder totally away without pain, when the nerves are not disturbed by any exciting cause. Ladies are frequently heard to say that they lose a tooth before every confinement, supposing that their then condition is the cause. It is, indeed, the cause of toothach, but not the cause of carious teeth, without which there would be no toothach.

A cure for toothach may be found under whatever form it may appear; but as it is not, as is generally supposed, a simple malady, but a very complicated one, each particular case requires its own peculiar mode of treatment. In order to understand this it is necessary to take a brief but general view of the nervous system of the teeth.

"The nerves are the conductors of all sensation. They have their origin in the medullary substance of the brain, of which, and the spinal marrow, they are formed. A nerve is composed of a number of minute fibrous threads, lying parallel to each other, and is covered by a continuation of the fine membrane which envelops the brain, and invests the inside of the skull.

"The nerves are divided into two kinds, those that issue from the brain, and from the spinal marrow. One of the former enters the upper-jaw near the dens sapientiæ, and distributes branches to the teeth. Another nerve divides into two branches, one of which enters the lower jaw-bone, and supplies the under teeth with nerves."*

---

* Joseph Murphy.

When toothach occurs, it must take place in one or other of the following situations, viz.: 1st. In the centre or side of a grinder where it is deeply indented with black lines. In these situations it is easily detected, and in general easily remedied. 2d. In the side of any tooth, at its point of contact with another from lateral pressure. Toothach may exist in such situation without any disease being visible to the unpractised eye, although on the extraction or opening a space between, a disease, like a maggot-hole, may be found into the very centre of such teeth. 3d. At the necks of teeth out of the ordinary reach of food in mastication, or of the tooth-brush, from awkwardness in brushing. This part is most usually affected when by age, or any other cause, the gum has receded from the enamel, which is its natural place of terminating in young persons. This new difficulty is sometimes produced by the increase of the number of teeth in a small mouth, and renders it more difficult to manage. 4th. At the roots of teeth; in which situation it may arise from inflammation of the lining membrane of the affected tooth's socket, or at the tip of the root where its central nerve joins those of the jaws. Sometimes the roots of the teeth themselves become swollen from continued inflammation.

Toothach, like all inflammatory diseases, has particular stages through which, if unattended to, it must take its course.

In most instances it proceeds from inflammation of the nerves and blood-vessels contained in the tooth. The inflammatory action, whether excited by cold or by the contact and pressure of foreign substances, causes an enlargement of the vessels as in other parts of the body, in blood-shot eyes for instance; and which, from their situation in the tooth, as well as extreme sensibility, not finding room to expand, are pressed against the sides of their bony chamber. This pressure, it is presumed, occasions the pain.

When a tooth is much decayed, the nerves, &c., may be seen like maggots to rise out of their natural channel; but after the inflammation has been reduced by any means, they disappear. In the interior of every tooth, is a cavity of considerable size, which assumes the general form of the tooth itself, being larger in the crown, and gradually diminishing through the whole length of the root or roots, at the extremity of each of which it terminates in a minute foramen. This cavity is filled with a pulpy substance, which is highly vascular and exquisitely sensible, and is closely attached to the walls of the cavity. The nerves and vessels which supply this structure enter the cavity through the opening at the extremity of the root.

When the cavity within a tooth has once been exposed, and a diseased action of the vessels has continued so long as to leave no hope of effecting a cure, but by their extinction; the time required for producing this, is almost invariably in proportion to the volume of these vessels, which corresponds exactly with the shape and size of the tooth.

"After the lining membrane (nerve is here meant) of the teeth is exposed, it requires a space of time, from one to twelve months, before this membrane is destroyed by chronic inflammation and suppuration. During this time the patient is always subject to the toothach."*

If the inflammatory action has been long permitted to remain, the tooth, from the casual swelling of the membrane that unites it with its socket, is partially ejected; for it is not fixed there so much like a component and inseparable portion of the jaw, as a ball moving in a socket, and is consequently felt to be longer than the other teeth. Owing to this cause, in shutting the mouth, a greater degree of pressure comes on the painful tooth, and the inflammation is thereby increased. A simple remedy for this is to keep the teeth apart by means of a small pad, which may be placed between two teeth in some other part of the mouth. To prevent swallowing the pad while asleep, a strong thread may be fastened to it, whose other end is tied to a button-hole, &c. Those who trust to their peculiar talent of keeping the teeth apart during sleep without a pad, will often find themselves disappointed.

---

* Koecker.

"A leech should also be applied to the gum, and repeated as often as the recurrence of pain renders it necessary. Should inflammation have even extended to the gum and alveolus, still, if it has not yet produced suppuration, the free application of leeches will be very likely to relieve it; and as it often happens after one or two attacks of this kind, that absorption of the internal membrane takes place, the relief thus afforded is frequently permanent, and the tooth is preserved."[*]

A bread poultice will generally relieve a case of

Thos. Bell.

this description if applied early; if late, it will hasten suppuration and consequent relief. It may be applied in the following way: Take a piece of crust of bread about the size of half a finger, moisten it in hot water, and apply it between the tooth and cheek, keeping the crumb side next the tooth until relief is experienced.

Cases frequently occur in which the patient will submit to any degree of suffering rather than have a tooth extracted. For the satisfaction of such persons, it may be as well to state that "if repeated inflammations be submitted to, a cure will be performed in time, by the stump becoming totally dead." *

The author has, he believes, succeeded beyond all other practitioners in affording relief from this most intolerable of maladies, and in preserving carious teeth from further decay; for the truth of

---

* Hunter.

which statement he unhesitatingly refers to the extent and high order of his practice.

His silence in respect to some of the ingredients he uses, has given rise to various imitations, for the ill success of which he has been frequently blamed. But in reserving to himself the secret of so valuable a discovery, the result of long and patient meditation and experiment, he merely avails himself of the same right as an author has to his copy-right, and as a patentee to an original invention.

His practice is to cure teeth of pain and tenderness first, and afterwards to stop them permanently in the usual way.

His imitators, under the borrowed designation of anodyne cement, &c. (an original expression of his own), have applied at once, without any previous process of preparation, an amalgam of quicksilver, with filings of silver, &c., as before explained and condemned, in page 144, *et seq.*

Before explaining his own mode of treating toothach, it may not be out of place here to give a brief view of its treatment by others. But first let him assure the much-respected writer of the following paragraph, that he is in error when he states that "The cements which have been so much used for curing toothach, &c., both on the Continent and in this country, generally depend, for any degree of utility they may possess, upon the opium which enters into their composition."*

The author of the present treatise, and originator of the term Anodyne Cement, most solemnly declares that he has never used one grain of opium or other narcotic in the whole course of his practice, as a remedy for teeth.

In a work entitled "The Economy of the Teeth, Gums, &c.," it is stated, "The vulgar method of treatment in these cases, and which is extremely injudicious where acute pain and much inflammation exist, is to apply tinctures and essential oils upon cotton, as tincture of benjamin, oil of marjoram, rosemary, andthe like; or pills made of camphor and opium, or chewing the acrid root of the pellitory of Spain. Some destroy the nerve with sulphuric or nitrous acid, or a hot iron, or touch the antehelix, or posterior eminence of the ear with the latter. But when any of these means are tried, if there be much inflammation, bleeding, purging, and blistering behind the ears ought to precede their use."

---

* Thos. Bell.

"Where toothach is the consequence of any sudden attack of cold, the gums are inflamed, the cheeks swollen, and the pain is extended to that side of the head. Where the symptoms are violent, two or three leeches ought to be applied, the jaws fomented with a strong decoction of camomiles and poppy-heads, with opening medicine. A gentle emetic has frequently cut short an attack of the toothach."

The celebrated Hunter recommends that "If the patient will not submit to have the tooth drawn, the nerve may be burned: that this may have the desired effect, it must be done to the very point of the fang, which is not always possible. Either of the concentrated acids, such as those of vitriol, nitre, or sea-salt, introduced as far into the fang of the tooth as possible, is capable of destroying its soft parts, which most probably are the seat of pain; a little caustic alkali will produce the same effect; but it is a difficult operation."

Murphy recommended "essential oils: the best are the oils of cloves and cajeput. A mixture of ether and laudanum, or of laudanum and any ardent spirit. They are applied on a piece of cotton. Gall-nuts afford relief. Camphor and opium in pills are applied to the teeth of the upper-jaw."

The author's method of curing toothach is, in general, by the application of an anodyne poultice. When applied, it is of the consistence of soft dough, and affords immediate relief to all cases of *simple* toothach—as when excited by heat or cold, by the contact of foreign substances, as food, &c., or by the fracture of a tooth in attempting to extract it; and in all cases whatever, where there is nervous irritation. If the nerves, &c., within a tooth be actually exposed, it is possible that an inflammatory action exists with a formation of matter. In such a case relief is afforded; but when matter has formed underneath, or blood has exuded from the internal vessels, the poultice, which like plaster soon acquires consistence, serves, like any other plug, to prevent the discharge, and, if not removed for the time, the cavity cleared out and refilled, the pain would return as bad or worse than before. This is the stage at which those imitators who use metallic amalgams fail in giving satisfaction. An ulcer within a tooth, as elsewhere, will, with due management, heal up; after which the cavity may safely be filled up with metal. Freedom from pain is procured instantaneously by an occasional dressing, and by successive applications of the poultice the pain is not only kept off, but the bony structure is rendered as insensible to touch as stone itself; after which the diseased bone may be cut away with instruments, and its place artificially restored with gold or tin. The anodyne poultice produces no effect whatever on the appearance of the tooth, and may be swallowed as harmlessly as a crust of bread. Disease may exist for years in the vessels within a tooth without exciting much, if any attention, on the part of the patient; in which case inflammation of the periosteum, or lining membrane of the tooth's socket, as well as of the gum, will attend any excitement of the internal nerves of the affected tooth. This general inflammation is easily reduced by local bleeding, bread poultice, &c., as in other parts of the body. All tenderness of touch, as at the necks of teeth close to the gums, is easily cured with the anodyne; and when sufficiently hardened to endure the touch of the tooth-brush, a recurrence is easily prevented by adopting the plan recommended in the article “On Stopping Teeth,” &c. When the disease is between two teeth and invisible, and even when the affected tooth cannot be distinguished from the others, a patch of anodyne poultice placed along and between the necks of the whole row in that side, will detect the diseased spot and relieve it.

However tender front or other teeth may be, from lateral disease, all tenderness is made to cease by the use of the anodyne poultice; and such teeth may uniformly be preserved on removing the diseased parts, leaving a clear even surface ever after—if kept carefully clean by the patient. At an early stage of caries, toothach may be effectually prevented, and for ever. It is from long continuance that disease proceeds to the roots, and that teeth break down. Even roots may, nine times in ten, be rendered easy and useful, and when so, they ought to be permitted to remain. But, "Another disease of the teeth is a swelling of the fang, which most probably arises from inflammation. The pain may either be in the tooth itself, or the alveolar process:"* in which case it is better to have the root extracted

There are cases when no relief is to be expected except from extraction, as "It sometimes happens that gumboils originate from a disease in the socket or jaw, having no connexion with the tooth, and only affecting it secondarily. Upon drawing such teeth, they are generally found diseased at or near the point, being there very rough and irregular, similar to ulcerating bones."†

Incurable teeth, when they occur, are generally found to have their roots highly inflamed, with a fungous growth at their points. This is the first commencement of a gumboil. The sockets participate in the inflamed action, and if thin and delicate they are soon absorbed; when the matter formed discharges itself in the manner of a boil, and the tooth becomes easy. But in some instances the absorbing process is so slow, that the most enduring patient becomes too irritable to await its result. At every stage of decay previous to this one, the inflammation may be reduced, and suppuration prevented.

---

* Hunter.

† Ibid.

In attempting to be thus minute, the author's object is, if possible, to remove the mistakes that the novelty of his practice may have originated.

39.—CASES.

The following cases will further illustrate the nature and object of his practice:

CASE OF DECAY PROCEEDING FROM LATERAL PRESSURE.

Great pain was experienced for some time between two grinders of the under-jaw of a lady. A dentist effected an opening into the diseased parts in the usual way; but, in cutting out the caries, occasioned so much pain as to be compelled to desist, and directed that spirit of wine should be frequently applied to the teeth on cotton wool, as a palliative. The pain, however, continued to be severely felt, and lasted almost without intermission for three weeks, when the anodyne poultice was applied, and afforded instant relief. About a fortnight after, having been repeatedly applied during the time, gold stopping was, without pain, introduced in the usual way, and the patient permanently cured.

CASE OF A LADY BEFORE CONFINEMENT.

In this case the lady had lost a tooth on every similar occasion previous to this one. An upper small grinder was much decayed from lateral pressure, and occasioned so much pain as to induce her to make up her mind to have it extracted, which was needless, and contrary to the advice of her medical attendants; however, she first tried the anodyne. It was applied twice before the lady's confinement, and after her recovery, two years since, the tooth was stopped with gold in the usual way, and is preserved.

CASE OF A LADY BEFORE CONFINEMENT, BUT SOMEWHAT DIFFERENT FROM THE ABOVE.

Of two carious teeth that ached much, and equally, in one the decay was recent and rapid, at the neck of an upper double tooth; in the other, an under wisdom-tooth, the decay was of very long standing, as its incurably dark appearance indicated.

The anodyne was applied to both the teeth: the upper one it relieved, and without any return of pain. In the under-tooth, pain always returned a few hours after the application of the anodyne, upon which a solution of mastich, on cotton-wool, was tried with success, as far as relief from pain was concerned; but it would never endure a permanent plug without a return of the pain, the internal blood-vessels being extensively ulcerated.

CASE.

A lady, residing a short distance from town, had a tooth temporarily stopped by an eminent dentist with tinfoil, as it could not then bear the pressure of gold. For a whole fortnight she endured great pain, in the vain hope that with time it would wear off. At length the lady resolved to have the tooth out, and came to town for the purpose; but would first try the anodyne, of which (though incredulous as to its efficacy) she had heard much. It was accordingly applied, but ineffectually at first, from the high state of inflammation excited by the former plug. The operation was repeated in half an hour, and still the pain continued. Impatient and distrustful, the lady quitted the house to execute her first resolution of having the tooth extracted; but on her way having experienced relief, she returned in a fortnight, when the tooth was stopped in the usual way; nor has there been any return of pain.

CASE.

A servant of the same lady had suffered from a similar complaint at intervals for several years, and had lost most of her teeth. To the few that remained the anodyne was applied: they were cured, and have since continued well, although not permanently stopped. The same patient had two front teeth in the under-jaw quite loose from the growth of tartar about their necks, which had induced absorption of a great part of their sockets. The tartar was removed, and the gums were severely and daily brushed together with the teeth, which are now quite fast.

CASE.

An upper lateral incisor of a nobleman was rapidly decaying, after filing had for some time retarded such decay. The cavity of the nerve was exposed, and the tooth so sensitive as not to admit of being dried even with lint. Although not sufficiently tender to induce its removal, it had been nevertheless given up as hopeless by an eminent dentist two years before. It was, however, cured by the anodyne, and stopped with gold. After some time, pain, as was feared, began to return. The gold was accordingly removed, and the healing process again for a while pursued. It was found necessary even to apply leeches, to such a length did the fresh attack proceed. After a time the tooth was again plugged with tin foil, and though eight years since, remains well.

CASE.

A large double tooth in the upper-jaw of a gentleman, was stopped with gold, after a few applications of the anodyne. This gentleman was afterwards from home, when from cold or fever the tooth began to ache so violently, that he sent for a country practitioner to extract it, who, much to his credit, on examining the part affected, and seeing the gold, recommended patience and a draught. This advice was followed, and the tooth has never ached since, although upwards of eight years have elapsed. A sister of the same gentleman suffered severe pain in one of her eye-teeth while in the country, and came to town to have it cured. The anodyne was once applied, and gold substituted a fortnight after, nor has the pain returned.

In the same family several cases of nearly a similar description could be named; but one, as it is of an opposite character, is more important.

A younger brother was, with respect to the decay of his teeth, affected as the other members of the family, except that his decayed without pain, and were therefore neglected. The author on seeing them, stopped nine or ten, several of which, although they had never ached, were so tender to the touch that the anodyne was required before the caries could be removed. This being applied, they were soon after stopped in the usual way: pain, however, shortly returned in two of them; but on the removal of the plug they became easy, and have been since left to their fate.

It is important here to add, that when cleaning the same gentleman's teeth some years after, these two teeth were refilled with tin, and remain well after an interval of two years.

CASE.

A lady had a large red spot on her cheek, for which she consulted an eminent accoucheur. On examination, he pronounced a diseased tooth to be the cause, and advised her to try the anodyne poultice. It was accordingly applied, which relieved the pain at the time, and seemed to cure the tooth, when the red spot in the cheek, which was as large as a half-crown-piece, disappeared. Pain, however, and the spot returned, and the tooth was extracted, when the tip of its root had the appearance of dry rot, and it was as black as charcoal.

CASE.

A gentleman suffered such inconvenience and pain in the only remaining grinder in one side of the under-jaw, that his rest was disturbed almost every night for five months. His dentist, from the importance of this only tooth, repeatedly declined to extract it, and every remedy that money could procure was ineffectually tried.

The tooth became easy so soon as the anodyne was applied, nor has there been any return of the pain, although the tooth was too far decayed to venture on stopping it successfully with gold.

The few subjoined cases will put the advantages of the cement in a more striking light.

CASE.

A lady had been confined to her room for upwards of a year, when she was attacked by a severe toothach in an under small grinder. Her medical attendant in vain recommended its removal: she would not consent. A physician of eminence was then called in, who declared that if the tooth were not extracted, the patient must sink under her accumulated maladies. The anodyne was applied in presence of the attending surgeon, and that very evening it relieved the pain. A fortnight after, the tooth was stopped with metal; but as the lady's general debility rendered the operation difficult and uncertain, the plug, in the course of a few months, dropped out, though the patient has never had a return of pain, and nearly ten years have since elapsed.

CASE.

A lady had suffered much from toothach during the greater part of her life, and had lost many teeth. Out of seven aching ones that remained among a very few sound ones, six, after repeated applications of the anodyne, have been permanently filled with gold; and the remaining one, a large double tooth, with the nerve exposed, although not decayed, continues free from pain, the anodyne being occasionally applied.

CASE.

A gentleman suffered much from toothach, and had also lost many teeth. One, a wisdom-tooth in the under-jaw, became so tender, that extraction seemed to be unavoidable. The gentleman, however, would first make trial of the new remedy. The tooth was so tender that not even lint could be introduced without pain. The decay was in the neck next the cheek, and the cement was applied in its softest state; the pain was immediately eased, but the tooth could not be touched even on the next day. Again, therefore, the cement was applied without wiping out the tooth, and permitted to remain as long as it would. In the course of the same week it dropped out, but the tooth continued easy, and admitted of being dried out and cleansed. A fresh supply of cement was afterwards introduced, which lasted a month, and the gentleman went into the country. On his return the caries was, without pain, removed, and the tooth loaded in the usual way: nor has pain returned, although nearly eight years have since elapsed.

The same gentleman, encouraged by the success of the first operation, had another tooth stopped which was much decayed, but did not ache. It was previously kept full of bees' wax or cotton dipped occasionally in spirits, for three years, during which time it did not sensibly decay, although tender to the touch. After it had been stopped with gold for about three weeks, the gentleman began to experience unusual pains in his eye, and the side of his head, and, as he thought, about the roots of the tooth, which was an upper large grinder. He returned to ask if it could be accounted for. The gold was removed; blood flowed from the cavity; the tooth was restored by the anodyne to its former quiet state, and has ever since continued easy by the former treatment.

This gentleman's case illustrates well the use of the anodyne.

Any tooth, however tender, may, in a very short time, be put in a state to be operated on without pain. If the caries be recent, the tooth will remain permanently well when plugged with metal; but, if it be of long standing, the pain may return as often as metal is introduced; in which case it will be found that matter or blood has collected within the tooth. The removal of the plug will, in any case, relieve the pain if done early; but if left long, the matter will painfully work its way out at the extremity of the root, by forming an abscess in the socket and gum of the affected tooth. Many persons in such cases have their teeth extracted, who, with a little patience and management, might preserve them. On the removal of a stopping, a little lint or cotton wool, with a drop of any sort of spirit, ought to be substituted: the continued use even of that simple remedy will frequently prepare a tooth to be preserved with metal.

CASE.

A lady suffered much from an unaccountable pain in her head, ears, &c., for upwards of three years, during which time she consulted several medical men, to no purpose, and consequently began to believe that she was incurably affected with the tic douloureux. This lady had never sustained the loss of a tooth, although several had become carious. The molar teeth in both sides of the under-jaw were extremely tender on touch, and on application of heat and cold. Several dentists had tried to plug them, but they were too tender even to be cleansed, and so were permitted to remain. Their decay commenced at their necks next the cheeks, and the caries, so far as it went, was as black as charcoal. It was therefore considered a case for the cement, which was tried, and with success. Of the six affected, the two wisdom-teeth were so very much decayed, that their removal was recommended. The four others were attended to and dressed about once a week for two months—the pains gradually ceased—the lady began to have good rest at night—and the four were stopped in the usual way before she left town for the summer.*

---

* It is now eight years since, and the four teeth continue well.

CASE.

A lady had a molar tooth of the under-jaw much decayed and painful; she consulted the author more than once, before any thing was permitted to be done. A long-continued fit of toothach, and some sleepless nights, however, overcame her scruples; the anodyne was applied, but the pain remained undiminished during the night. The next day the cement was to have been renewed, but on learning that the tooth was then quiet, and had gradually become so from an early hour of the morning, the first portion was not disturbed, and the pain shortly after ceased altogether.

CASE.

A lady, who usually resides in the country, had suffered so much from nervous affections of the head as well as from general debility, arising from the want of rest, that she came to London for the express purpose of consulting a physician, as in addition to her other complaints, it was feared that she was sinking into a decline. Having repeatedly heard of the good effects of the anodyne, even in the most desperate cases, she resolved to try it. In the course of a few hours after the application, she began to experience sound sleep for the first time during two months. In this case, unfortunately, pain again and again came on in two of the teeth; they were consequently extracted, when the extreme points of their roots were found (a very rare occurrence) quite black and diseased.

CASE.

A gentleman was thrown out of his chaise, and received a dreadful injury in the front teeth of both jaws. In this state he applied to a respectable dentist, his friend, who recommended him to the author, as the mouth was in so tender a state as scarcely to bear the pressure of the lips, and for two days he had taken no sustenance. The anodyne was applied in one extensive body, covering both the gums to a considerable extent. This produced relief from pain in half an hour, and continuing the treatment for a few days, the teeth were rendered sufficiently firm to bear the process of regulation, and were all ultimately preserved, though the fracture was so extensive as to have caused the loss of the whole, had not the dentist before alluded to, and who had himself been benefited by the application of the anodyne, recommended the patient to the author.

Innumerable instances, extending to a period of more than ten years, could be adduced to prove that the anodyne poultice will relieve and permanently cure, immediately or by repeated applications, nine cases out of ten of the most inveterate toothach. The author would certainly recommend the extraction of incurable teeth, and useless stumps; but he thinks it right to state what he has said, for the comfort of those who cannot be induced, by any suffering, to submit to such an operation.

40.—EXCISION OF TEETH.

Before dismissing the subject, it is proper to refer to a practice lately introduced, but which is already dying a natural death, namely, the excision of teeth. "I have seen too much of the injurious (would that I had not to add fatal) consequences which have resulted from the revived operation of excision, or cutting off of decayed teeth."* A tooth is sometimes successfully excised—that is, snapped off with a sharp pair of pliers, lower down than the disease, and the nerve may also be sometimes dragged out of the remaining roots; but in general the nerve either breaks where the tooth has been fractured, and continues to give pain until it withers away out of the reach of contact with food, &c., or the nerve of the part cut away may remain like a thread issuing from the channel in the root. In either case the treatment is to cut out the nerves so far as is attainable, when the patient will permit.

---

* T. Bell.

The author can refer to cases in his practice, where, after much suffering on the part of the patient, he had to apply the anodyne to cases thus treated, and always with unfailing success. And also in accidental cases, where teeth have been broken by an unsuccessful attempt at extraction, by a fall, or a blow, &c. As one additional proof of the superiority of the anodyne poultice over every remedy hitherto used, he may state, that those who profess excision frequently try to stop tender teeth with fusible metal, after attempting to stun the pain by the application of icy cold water. This is a proof of the inefficiency of excision as a general remedy.

CHAPTER XIII.

ON TIC DOULOUREUX.

Sir Henry Halford, in a paper read before the college of physicians, put forward a theory that the distressing malady, tic douloureux, is produced either by a deposit of bone out of the natural course, or by exfoliation of bone, the consequence of some disease or injury. Real cases of this dreadful malady are extremely rare; but others that pass current under this designation, are quite common. Perhaps Hunter referred to this disease, although under a different name, in the following passage:

“There is one disease of the jaws which seems in reality to have no connexion with the teeth. I have known cases of this kind, where all the teeth of the affected side of the jaw have been drawn out, and the pain has continued in the jaw, and has even attacked the side of the tongue, being entirely a nervous affection.”

It would appear then, that in a case of tic douloureux, whether real or imaginary, where the teeth are suspected to be the cause, there is not known to the faculty a method of ascertaining the fact without extracting teeth. Notwithstanding this, as instances supposed to be tic come almost daily under the author's notice, without presuming to offer any decided opinion of his own on so delicate a subject, and one which appears to have baffled every attempt at a satisfactory exposition of its nature, he hopes to be excused if, on a subject of anxious inquiry with many, he exceed the strict line of his presumed professional pretensions, and state generally, a few of the cases with which, from time to time, he has been practically acquainted, and which were apparently produced by carious teeth in their various stages of decay.

Mr. Bell's description exhibits the best popular view of the disease.

"The term *tic douloureux* has, indeed, been employed to designate every painful affection of the nerves, to which an obvious and apparent cause could not readily be assigned, and has served but too often, like many other *names*, rather to conceal the ignorance of the physician than to distinguish the disease.

The consequence has been, that instead of endeavouring to investigate the cause and the true nature of these affections, they have been confounded together without distinction, and a purely empirical treatment has been almost universally adopted."

Anomalous pains of this kind are frequently occurring in teeth which were free from any pain when stopped, and may be the result of temporary inflammation in the bony substance, or of its blood-vessels, or in the sockets, which might yield to opening medicine, and remain easy when permanently stopped; or may be the result of a diseased state of the nerves, rendered incurable from long continuance, unless it were possible to cut or burn away their diseased surface, which operation not unfrequently leads to a more healthy action of the parts, permitting such tooth to be permanently stopped. But when moisture oozes from the decayed surface, and, accumulating, forms matter under the plug, the most painful consequences frequently ensue, which the early removal of the plug would prevent; or if only temporary inflammation has taken place, the tooth may, after a time, be safely re-stopped. In some cases pain will ensue, with swellings of the parts, in the course of an hour or two afterwards, while in others it may not take place for weeks or months.

The swelling often extends to the bones of the jaw, but will generally subside if the exciting cause be soon removed; it, however, sometimes becomes permanent with or without pain. Results precisely similar often take place from the accidental filling up of a hollow tooth, with food or any other substance which is either sufficiently solid or clammy, for a time to seal it up; the bodily system having been predisposed to inflammation. Is it not probable, then, that such circumstances are sometimes the exciting causes of even tic douloureux? The following cases appear to the author to bear him out in this opinion:

41.—CASES.

The most decided case of the kind, and which from its violence and permanency, he has ventured to consider as allied to tic douloureux, which has fallen under the author's notice, is that of a lady, who has suffered severely from the complaint for several years past. So violent and long-continued have been the attacks, that she has been unable to attend to the ordinary affairs of life, and her friends watching her by night and day, have long ceased to indulge in the hope of her perfect recovery, or a cessation of her suffering.

The malady exists in the one side of her upper-jaw, over stumps and excessively carious teeth. The pain is not continuous, but the intervals of repose are short, varying from minutes to hours and days, and even weeks.

The pain commences with a severe throbbing sensation, and more particularly if any attempt is is ever made to examine those carious teeth. Even opening the mouth appears a sure cause of a fit. The author had first occasion to know the case, on account of some teeth (the corresponding ones) that began to be carious in the other side of the same jaw. In one (the first large grinder), the decay commenced in the natural indentation of the grinding surface; in the one beyond, a piece of its side next the cheek was broken off, and exposed the nerve;—the two small grinders were also carious from lateral pressure, and they had all become tender, accompanied with occasional attacks of toothach.

As often as any attempt was made to clean out the diseased cavity, an attack of severe pain always cut short the process. At her own desire gold stopping was attempted to be introduced, but so ineffectually was it done, that after several months the tooth began to ach, when it became necessary to remove the gold entirely.

The anodyne invariably and instantaneously allayed the pain of it, and also of the other carious teeth as soon as applied, and they continued free from pain for weeks, and even months together, after each application; and as any attempt at a more permanent operation was always attended with agonizing pain in the side first affected, as often as the mouth was stretched open, all further attempts at a more permanent stopping of any of the teeth have been altogether abandoned.

CASE.

A gentleman having his teeth cleaned, and several stopped, had one so tender as to require the application of the anodyne poultice. It was the second small grinder in the under-jaw of the right side. He complained of tenderness in the two upper small grinders of the same side, but in which no symptoms of decay were visible. On probing between them with a point, decay from lateral pressure was discovered. A separation was immediately effected with a file, and other cutting instruments, in order to admit of cleaning out the caries, and stopping the teeth, each one requiring to be separately attended to.

The caries was discovered to have proceeded so far, that it could not be thoroughly removed without repeated applications of the cement, after which the teeth were permanently filled with gold in the usual way.

During these operations, tic douloureux became the subject of conversation. The gentleman said he had suffered severely from it under and near the left eye, about four years before. For four months he was in a state bordering on delirium: his friends watched by his bedside during the whole of that period. The pain at last ceased, and he recovered his usual health; nor has he had any return.

On a further examination of his mouth, the roots of two decayed teeth appeared black in the gum, but he was not conscious of having had toothach during any period of his life. The roots were in the upper-jaw, and corresponding with the two just stopped. An attempt had been made to extract them within the previous two years, because they became offensive, but they were broken in that attempt. The probable time they had taken to decay laterally, from the first stage to the period of the attempt to remove them, might have been between two and three years ; so that there is little doubt, that if this gentleman's teeth had been duly examined and extracted, or cured, previous to the severe inflammation of their nerves, and the consequent symptoms attending his case, the suffering he endured might probably have been prevented. No other manifestations of the malady now remain, except the roots of the teeth, over which, in the jaw, all the pain had been experienced.

CASE.

A lady suffered much and long from nervous headach, and occasional twitches of toothach, which produced restlessness and want of sleep to such a degree, as to threaten her very existence. Medical aid was had recourse to in vain, nor were the teeth even suspected, until a medical man, who had on several occasions witnessed the beneficial effects of the anodyne poultice, recommended that the teeth should be examined. Several were discovered to be faulty ; the anodyne was applied ; a soothing sensation was soon experienced. The gums were spongy from the great collection of tartar that clung to the teeth. The tartar was completely removed, and the gums were restored to a healthy state, by the severe and daily use of a hard tooth-brush. The teeth, five in number, at first so tender as scarcely to admit of being wiped, were soon after stopped with gold in the usual way. The lady gradually recovered her wonted health and spirits, and, after the lapse of about a year and a half, she remains well.

CASE.

A young lady, of about sixteen years of age, suffered much in the same way for about four months. She gradually declined in health and spirits, nor could all the art of her medical attendants alleviate her sufferings, or bring her repose. The usual advantages of the country, and even the sea-side, proved unavailing. Her teeth were tender on the application of heat or cold ; but they were not so bad as to excite any particular notice. A physician, on seeing the case, suspected the teeth, and waited on the author with his patient. The anodyne was applied to several of the young lady's teeth ; she felt instant relief, had a good night's rest, and improved forthwith. She is now well, and can eat with those teeth that were so tender, for they are now permanently stopped with gold.

CASE.

A gentleman had suffered for years from what was supposed to be tic douloureux, and for three years had medical advice without any visible improvement. About a year and a half since, the same person consulted the author respecting his case, having several carious teeth in various parts of his mouth, to the extraction of which he could never be induced to submit. The anodyne was applied, and successfully from the first. All nervous headachs, earachs, want of rest, &c. &c., ceased forthwith, and he is now in the enjoyment of perfect health. This person usually resides at Brighton, where he formerly used to try the effect of the sea breezes, without any beneficial effect. The author was lately reminded of the case by the gentleman himself, who came to town for the express purpose of an annual inspection of so interesting a case.

CASE.

A young lady from the country had come to town expressly to have the best medical advice, having for the four previous months taken the advice of several country practitioners without success. Incessant and severe pain was felt, as she supposed, in the bones of one side of her nose, which passed along under her right eye to the forehead, and which nothing could ever relieve, even for a second. On examination, her teeth and gums were found healthy and clean, with the exception of the two large front teeth, which, as it turned out, had been separated by a thin file some months before, on account of a caries that threatened to attack them from lateral pressure. On probing the carious parts she experienced pain. The anodyne was applied, but when she returned on the following day it was found that the pain still continued. Although it was then feared that her teeth had nothing to do with her malady, a fresh trial of the virtue of the anodyne was made, having previously prepared the teeth by cleaning out a good deal of the caries, in order to admit of a more perfect application of the anodyne. On the lady's return next day, she declared with joy that her pain was greatly diminished, and had for a time ceased altogether. Two days after, and greatly improving, the young lady unfortunately returned to the country, without waiting to effect a more perfect cure.

It would be easy to fill a volume with cases of anomalous pains like the above, which the author leaves it to those more conversant with that formidable malady, the tic douloureux, to decide, if they were in any way allied to it. Suffice it to say, that there are many instances where the extraction of the teeth might probably relieve the pain, but in which many obstacles oppose themselves to such a measure; partly from the antipathy and horror of many to have a tooth extracted, and partly from the uncertainty of the affected teeth being the exciting cause of the malady. The anodyne poultice, without creating pain, but by removing it, brings the cause of the complaint to a satisfactory issue. If arising from the teeth it generally cures it, and removes the necessity of extraction; and, in conclusion, it may be permitted to remark that, in nearly all those cases which have fallen under the author's observation, there has been an unsound tooth underneath the seat of the pain denominated tic doulourcux. The author has recently had opportunities of witnessing the most remarkable and well-known cases, one of which is described in Mr. Mart's treatise "On Nervous Diseases."

CHAPTER XIV.

ON ARTIFICIAL TEETH.

The art of supplying artificial teeth, so as satisfactorily to answer all the purposes of natural ones, and at the same time without doing injury to those that remain, is as yet but little understood, and still less practised by the generality of the profession. Hence the antipathy so generally evinced towards the adoption of them, except so far as relates to appearance.

Artificial teeth, scientifically designed and skillfully adapted, can do no more injury than those whose place they supply, had they still remained, while they may be rendered of nearly equal service. In a case, therefore, of such moment, and one referring itself so closely to the convenience of so many individuals, it becomes highly necessary that the public should have at least some little insight, some glimmering of information, on the subject.

"Entire sets of teeth are worn with great ease and satisfaction, when well made and rightly adapted. The construction and adaptation of artificial teeth is an art in which some greatly excel others. Some teeth are so ill made and unskilfully adapted, that they are troublesome to the wearer, an impediment to speech and mastication, and even a greater blemish to the countenance than the want of teeth: those that are well adapted are, on the contrary, easy, useful, and ornamental."*

In constructing artificial teeth, utility and comfort as much as appearance ought to be considered by the dentist. The former refers to the plan that is applicable to a particular case, and the success with which it is executed; the latter to the successful imitation of nature, as well in the form and proportions of the teeth, as in the shape and expression of the mouth.

In order to be comfortable, a false tooth must be set on a plate of bone or metal, previously adapted to the form of the gum, in the space where the tooth is wanting; or if a sound root remain, by pivoting the enamelled part of another *upon it.* This latter plan is applicable to all the front teeth, as far back as the fifth tooth from the centre of the mouth in both jaws, and when well executed, is capable of defying the closest scrutiny to detect the deception. But if they are not well supported by the grinders, so as to prevent their collision with those opposed to them in the other jaw, which would shake and loosen them in their sockets, they soon drop out, like the front teeth of old people, after the loss of their double teeth.

---

* Murphy. *Note.*—The author takes the opportunity of stating here, that in quoting so liberally from other writers, he has done so for the satisfaction of his readers, who may be inclined to consider the coinciding opinions of many practitioners of more value than that of any separate individual.

False teeth are made of ivory, generally the sea-horse tooth, which is the hardest, or of mineral paste, as it is called, a sort of earthenware; the best, however, are natural teeth, transferred from the dead to living jaws. "Mineral teeth are composed of baked earth, covered with enamel flux, and coloured to imitate nature."

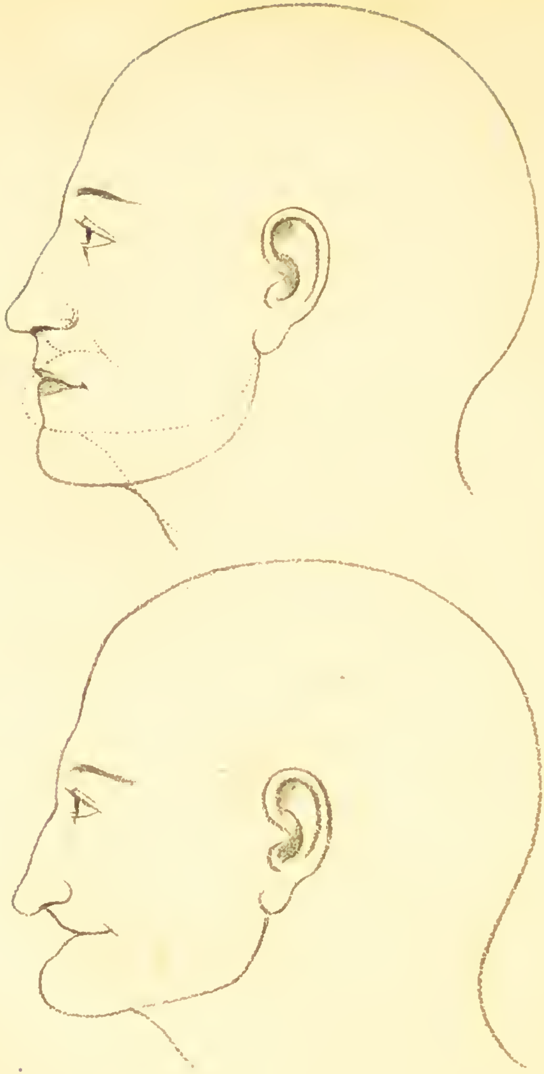
Duchâteau, a French chemist, first conceived the idea of incorruptible teeth in the year 1774. The art was supposed to be brought to perfection by M. de Chemant. The former used porcelain, for which honours were awarded to him by the Royal Academy of Surgeons in Paris. The latter, "Ayant amélioré cette composition," by employing "le sable de Fontainebleau, la soude d'Alicante, la marne, l'oxyde de fer rouge et le cobalt, fit de pareils dentier." While a later writer, F. Maury, observes, "Les oxydes employés à la confection des dents incorruptibles sont ceux de bismuth, d'or, de platine, de titane, d'urane."

If a sufficiently natural appearance could be given to mineral teeth, and could they be equally well adapted to the mouth as other teeth, they possess the advantage of being very cleanly, and might be made to answer with advantage in some cases. But they have not been brought to such perfection yet, and from their very nature they never can be made to answer, where the framework, as well as the teeth, are necessarily mineral. For in baking, they lose so much of the shape given to them when soft, as rarely to fit comfortably in their place; by which the mouth is injured, and the remaining teeth are loosened and twisted in accommodating themselves to mineral teeth. False teeth, to be worn with comfort, must be adapted to the mouth, and not the mouth to the false teeth, as in the analogous case of tight boots.

The basis, or frame, on which false teeth are set, when of ivory, is sculptured upon a plaster model of the defective part of the jaws; and when of gold, upon brass casts of the same. Notwithstanding that the cast of the mouth has been taken by the most experienced dentist, he will frequently find that when the frame comes to be tried in the mouth, it will press on some tender points here and there, which must be cut out, or otherwise altered. Mineral frames, once formed, must remain as they leave the oven.

When teeth are to be fastened by means of pivots, their roots are cut off at a proper length; the roots in the mouth on which they are to be pivoted are filed smooth, as high in the gum as possible, so that when the false tooth is fixed, the gum resumes its wonted place, and embraces the new tooth.

In cases where no roots remain to which new teeth could be fastened, plates, so formed as to fit and rest easily on the vacant spaces in the jaws, are made of ivory, or of metal, usually of gold; the false or artificial teeth are cut to the proper length, and riveted on the plate; or a pin is previously soldered to the plate which enters the natural cavity in the new tooth, where it is secured by means of thread wrapped in sufficient quantity around the pin, to keep the tooth in its proper place. In this part of the operation there is a secret, as yet known only to a few; it consists in dipping the pin and its binding in spirit varnish, which assists materially in fastening the tooth, and resisting the admission



The same Face, with, & without Artificial Teeth.

of moisture. Perhaps it would be an improvement so to varnish all artificial teeth occasionally, as if not carefully attended to, they absorb so much moisture of an unpleasant character, as to become offensive. Exposure, however, to a draught of pure dry air, does away, at any time, with this inconvenience.

As plates of bone are used as well as of gold, it may be proper to explain why sometimes the one, and sometimes the other, is to be preferred.

In the case of an aged person, after all the teeth have disappeared, the face becomes shorter by about an inch and a half, almost the extreme length of two teeth as they meet in the two jaws. (*See the annexed plate.*) To restore the former length of such a face, if gold plates only be used, the false teeth must be fastened without cutting off any part of their roots, which would give a hideous appearance to the face. The teeth, from the absence of sockets and gums to conceal their roots, would have the appearance of rails with wide spaces between. To obviate this latter inconvenience, the roots of false teeth are cut off when they are to be fastened on gold plates; which method, it is obvious, would not wholly restore the original length of the face. Notwithstanding this, it is frequently adopted in toothless cases, and is generally, although erroneously, considered as an evil inseparable from the art. For, although the teeth look natural enough, there is such an unnatural shortening of the face, and a falling in, with wrinkles of the cheeks attending them, that any person, however regardless of fashion, would rather go without; but this inconvenience attending gold plates, where the teeth, together with their sockets, have altogether or very much disappeared, is easily remedied by plates of ivory.

Gold plates are raised on brass models of the jaws, as spoons on a die; plates of ivory are hollowed out with gravers and chisels, being worked on models of plaster, hardened by boiling in strong alum water, or by absorbing dissolved bees' wax before a fire. The process is as follows:—The model is painted over with a colouring matter, generally oil paint, to prevent its drying too soon. A block of ivory, sufficiently large, is held horizontally over the model, the highest point of which it is made to touch, when the paint leaves a speck at every point of contact. Suppose, for a moment, the block to be of soft wax, which, if pressed home upon the plaster model, would give the exact mould which is sought to be obtained in the ivory. These points are cut out with the graver, the block is again applied, and the same process gone through, until the ivory presents an exact reverse of the model, and becomes in fact a mould of the jaw. To do this well is extremely tedious, although many dentists make short work of it, and apply the coloured points to the whetstone. The success in affording comfort to the wearer of artificial teeth made in this way, and the price put on such work, are in general equally small, and will account for the advertisements which offer such things at less than half-price, &c. To form a piece of ivory so as to sit easy in the mouth, and not spring up at one point when pressed on at another, is by no means easy; nor can it ever be done by an unskilful artist, however neatly he may execute the work. The ivory must be applied in a horizontal position to the wet model every time, and at exactly the same points from first to last, otherwise it cannot be made to fit exactly. In some cases, an under-jaw for instance, having no grinders on either side, one side may be much higher than the other, in consequence of the alveolar processes being less absorbed on that side than the other. To save trouble, some dentists would fit to such a model the block of ivory not horizontally, but at an angle, that would permit it to touch both sides of the jaw at once. On such a model, were one skilful and another unskilful dentist to form plates, the former never permitting the under surface of the bone to touch the model but in a perfectly horizontal position, while the latter adopted the quicker way of applying it slantingly to both sides at once, the plate made by the latter, although appearing to fit the model equally well as that of the former, will spring up on one side when pressed on the other. In consequence of which, no additional ingenuity can prevent inconvenience to the wearer, from the use of strong springs and clasps, now absolutely required to retain such teeth in their places; while the plate let down horizontally, and carefully hollowed out with more than double the labour, will sit like a rock at every part, when pressed at any point, and without the use of springs. In this way plates of bone can be made to sit easy in any mouth without tying, and without extracting stumps or teeth that are firm, whatever be the shape of the jaw. In order to illustrate still further the causes of failure in constructing artificial teeth, suppose the under-jaw of an elderly person, in which the front teeth only remain, and that artificial grinders are to be supplied in both sides of the mouth. They may be formed of one large block of ivory, as explained above, or of a separate small piece for each side, united by a bar of gold, passing from one side to the other, behind the remaining front teeth. It has been shown that, in order to ensure comfort to the wearer of artificial teeth, both sides of the jaw must be formed of one solid piece of ivory. In this case, the part of the block which is intended to rest on the gum, between the remaining front teeth and the tongue, is reduced to a state nearly as thin as the bar of gold used to connect two small blocks. This is effected with a labour twenty times as great as making the bar of gold. And yet the best dentists usually adopt the tedious and difficult process, in order to obtain a more comfortable fit to the wearer. This explains why artificial grinders, in the under-jaw, having both sides united by a gold bar, can never be made to wear comfortably, owing to unskilful fitting, until at last, after much inconvenience, the gum has adapted itself to such a state of things; for no human ingenuity can set or join the component parts, or both sides together, by means of a bar, so perfectly as not to occasion injury to the wearer.

Artificial teeth thus constructed, are fastened by strong clasps to the remaining front teeth, which, in consequence of being dragged by the unsteady motions of their new allies, become loose in their sockets, and drop out; or they waste away by the friction of such collars. This method is adopted to save the expense of a block of ivory, as two small pieces appear to answer equally well, and this is one reason why mineral teeth invariably occasion the loss of the remaining sound ones. A dentist, then, who understands his business, will, in such case, not only not occasion injury to sound teeth, but by judiciously supporting them by artificial ones, well constructed, will cause them to last the remainder of life.

In explaining where gold, or plates of ivory, are to be preferred, it will readily be seen how, when the latter have been made to rest as easy on the gum as the former, they possess another grand requisite, bulk with lightness. The surface or scoop which is to rest on the gum, being completed, a proper form is given to the whole mass, and that form, as nearly as possible, what the jaw was previous to its losing any of the teeth. Long before the block is reduced to its smallest dimensions, it is frequently introduced into the mouth, and made to undergo the same process by colouring the natural jaw as it was previously on its model, unless, indeed, as it sometimes will happen, that it fits the mouth at once. To fit in the mouth, and on a model, are, in practice, very different things; and we accordingly find, that artificial teeth, beautifully executed and adapted to a model, are frequently made only to be laid aside by the intended wearer as soon as sent home; for there are makers of artificial teeth that send them home, when finished on a model, like a coat or shoe, for better or worse.

Ivory plates then, being specifically lighter than gold, have, in their proper place, from the quantity that may be employed, a decided advantage over gold, which, consisting of thin plates, is only applied as a basis to fasten teeth on, and not to fill up vacancies in the jaws; in addition to which advantage, the same piece of ivory may be made to represent gums as well as teeth. It also supplies the place of the lost sockets of the teeth, which, in reality, constitute the substance that swells out, and gives both length and breadth to the lower part of the face; for the gums never quit the living jaws, although they forsake the teeth, as is indicated by their roots becoming exposed when their sockets are absorbed, and the gums sinking down to the jaw-bone.

Cases occur where the union of ivory with gold is required, but even in these the gold must be raised on successive models of the mouth, and adapted with the same care and exactness as if no ivory were to be applied; that is, the gold plate must first be made to fit the gum, so that no pressure in mastication will give pain; and the bone must be afterwards fitted down on the gold model, and formed into teeth, as if ivory only were to be used. This mode is applicable where a jaw has irregular vacancies, and remaining teeth and stumps of various lengths and unequal parts are to be artificially filled up; and as the whole frame is much better for being of one unbroken piece, a gold plate is the preferable, combining strength with lightness. This plate is not to be confounded with the gold bars already alluded to.

Without the adoption of this mixed plan, it would sometimes be necessary to reduce the ivory to so thin a state in some places, as to render it totally unfit for use. By a proper union of gold plates and ivory, a case, supposing the worst, wherein every other tooth was wanting, and the remaining ones almost of all shapes and sizes, could be made comfortable without extracting any.

In order further to illustrate the advantages of a combination of gold and ivory, let us suppose a case where so many double teeth have been lost as to occasion a nearer approach of the chin to the nose than formerly, the natural consequence of which would be, that the front teeth of the one jaw, by the unceasing and forcible collision every time the mouth is shut, against those of the other, will loosen them in their sockets and grind them down. To obviate this, filing is often had recourse to, which is bad, in so far as it only produces a temporary advantage by violent means. The natural disposition of the alveolar processes, or sockets of the teeth, is to eject those that are without opponents in the other jaw. It is better to remove the cause of the first inconvenience by artificial grinders, as without them, teeth shortened by filing soon lengthen again, and quickly arrive at their old post, while the natural process of ejecting them produces ulceration of the membrane of the socket, which, in many persons, continues for life, or until such teeth are removed. In the greater number of cases, the proper remedy then, where an undue pressure of the front teeth of one jaw is exerted against those of the other, is to cap the remaining teeth with gold, and to fill the open spaces with false teeth.

To understand the necessity of this, let any one examine the mouth of a person whose teeth are perfect. The front teeth of the two jaws when the mouth is shut, will be found in contact simply, and incapable of retaining forcible hold of any thin substance, as a piece of paper for instance; while the double teeth take a hold that no human power can shake without the consent of the party. Undue pressure of one jaw against the other was the cause of the front teeth becoming loose, and that cause may be removed temporarily by the introduction of a piece of card between the remaining grinders, any where in the mouth. Hence it will be seen, that the proper remedy for loose front teeth, is to cover the grinders over with caps of gold; for ivory, if reduced to the necessary degree of thinness, would soon be bitten through. The empty spaces between the remaining teeth might be filled up with ivory formed into teeth, their grinding surfaces being of the same level as those covered with gold, so as to occasion an equal pressure on all the grinders; for if one tooth is longer than the rest, all the pressure of the mouth comes upon it, and occasions inflammation in its sockets, accompanied with intolerable pain. The same effect is produced by a plug in the crown of a tooth if left too high, and that can be felt on shutting its opponent against it.

In many cases teeth made of ivory alone will remedy the injury here alluded to, by keeping off the pressure of front teeth ; but should any double tooth remain that is not permitted to touch its opponent in chewing as before, that tooth will soon become troublesome. Hence it is that sound teeth are frequently extracted that an artificial piece of teeth may be applied with any tolerable chance of being useful.

Many persons, rather than have a sound tooth or even a useless one extracted, forego the advantages of artificial teeth, although possessed of the means and every inclination to possess them. To such it must be satisfactory to know, that artificial teeth can be applied to almost any case whatever, without extraction.

In a metropolis like this, where the division of labour, while it cannot injure the individual, is attended with advantage to the public, the art of the dentist admits of several subdivisions. Presuming on this circumstance, the author has, from the commencement, restricted his practice to one department; viz., the Cure of Toothach, and the Preservation of Teeth, and with a degree of success fully commensurate with, if not beyond, his expectations.

In order fully to appreciate the advantages to be gained by artificial teeth and plates for the mouth, let us refer to the natural forms of the human mouth. In some, and they are by far the greatest number, the front upper-teeth shut outside the under ones. In others, the cutting edges of the front teeth of both jaws meet in the same perpendicular line; while in the third case, those of the upper shut inside the under front teeth. This last form is called under-hung, or having a projecting chin. A projecting chin, like squinting, is frequently the result of a bad habit acquired by imitation in early life, and is considered somewhat of a deformity. It is, in many instances, produced by the injudicious extraction of some of the upper teeth in early life, without removing an equal number in the under-jaw. Cases are to be met with where those of the upper-jaw shut partly inside and partly outside their opponents in the under-jaw. This is surely the result of negligence in early life, and might have very easily been remedied by any dentist; or even by the child himself, were the method explained to him: suppose, by the use of a thin slip of wood or ivory, to serve as a bridge to assist the upper tooth over the under one.

Each of these three forms is liable to injuries peculiar to itself, although the remedy is much the same in all. Front teeth that shut over the under ones, if the support of the double teeth be removed, are pressed against them laterally every time the under-jaw is raised in shutting; the natural consequence of which is, that the posterior surfaces of the upper ones are ground away, or they are loosened, their sockets becoming absorbed from incessant irritation. The same thing occurs in some persons even before the grinders have been lost, partly from the greater length natural to their front teeth than the back ones, and partly from the gradual abrasion of the surfaces of the double teeth. In such a case the cutting points of the upper front teeth reach at the under gum, or the under ones touch the roof of the mouth, and irritate and inflame it; the teeth all the while becoming loose, and the patient finding no relief but by placing something between the grinders of the two jaws to prevent the contact of those in front. The remedy for this evil is extremely simple and effective, but the execution difficult, requiring great mechanical skill, and ability to work in metals. The grinders must be lengthened. To understand in what manner, suppose a piece of card placed between the double teeth when the mouth is shut, and by similarly using a plate of metal or of bone, formed into caps, as gloves fit the hands, the usual functions of teeth can easily be performed, the teeth thus covered being lengthened. This plan is sometimes adopted to fasten artificial palates where they are required, the palates being so constructed as to cover the whole roof of the mouth nearly as far back as the uvula. In some instances, where the difference in length between the front and back teeth is great, after the first plate of gold has been adapted to the jaw, layer after layer is soldered over it, until the teeth have attained the requisite length to prevent the contact of the front ones. If the plate be on one jaw only, it never can be worn comfortably until the double teeth opposing it in the other jaw lock into it when the mouth is shut, as naturally as they formerly did into the surfaces of the natural teeth. Rather than have recourse to a plate, many persons will submit to the loosening and loss of their front teeth, in order to have them artificially restored.

One thing becomes evident from the study of the various processes of constructing artificial teeth, that the dentist who could render them comfortable to the wearer, must himself be a competent workman, and not dependent on other, and superior mechanicians.

Beautifully executed artificial teeth, like decoy-ducks, are to be seen hung out in windows, and described in advertisements, when the parties professing to have made them cannot even bend a wire or clasp to a tooth without breaking it. Such dentists, perhaps, never formed a single tooth from ivory, never raised a gold plate on a model, and never made the wearer of artificial teeth comfortable; and they never can. The real maker of artificial teeth, that is, the person who can do justice to his patient, has much to do in his presence; nor can his skill, or the want of it, be concealed from an observant patient. But he too frequently, perhaps generously, ascribes the apparently unconquerable difficulty to the art, and not to the artist.

If health be desirable to those who wish to live long, surely nothing contributes more to a healthy digestion than a good set of teeth. No pains, then, it is presumed, can be too great on the part of the public and the profession to attain the utmost perfection of which the art is capable, and that can only be done by making public every improvement, and exposing every fallacious and empirical attempt.

Suppose the case of a front tooth decayed to the gum, and its root calculated to receive a new pivoted tooth. If the tooth whose place was to be supplied had decayed, or was otherwise injured and lost, in consequence of the lateral pressure of its opponent in the other jaw, that same pressure would still continue to affect its successor; and in order to avoid this, the new tooth is filed down so thin as scarcely to retain the gold pivot. This would be a case of bungling. In the same instance, suppose the root also gone, in consequence of the tooth originally becoming loose from friction; a plate or socket of gold, or of bone, would be necessary, on which to fasten the false tooth. The whole would be fastened to the adjoining teeth. The pressure of one jaw on the other being still the same, not only would the new tooth be constantly shaken in its place, but the tooth on each side to which it had been fastened.

So backward is the state of the art, that many dentists fasten false teeth to the adjoining firm ones by means of silk ligatures; this will, of course, keep them in their place, although dangling and loose, until those to which they are made fast drop out, which, in general, is very soon the case. By-and-by a new piece, with three false teeth, would be required, with similar results and greater advantage to the dentist; and so on *ad infinitum.* For the truth of all this, it is only necessary to refer to the great mass of wearers of artificial teeth. A dentist who understood his business, and had honour enough to practise it conscientiously, would decline the case altogether, unless permitted to accomplish it in his own way. Many instances are to be met with in which fast teeth become loose from friction on an artificial one, where no necessity existed for such pressure, and all through the unskilfulness of the dentist. The author has met with cases where, for instance, the constant friction of the under natural teeth against the socket of an upper false one, had loosened two more, and produced ulceration of the gums; by cutting away the points of contact from the artificial socket, and recommending a discontinuance of the artificial tooth for a few days, the whole became well again, and was worn with comfort and advantage.

In conclusion, let it be remembered by the wearers of artificial teeth, that teeth, or roots already loose from the absorption of their sockets, had better be extracted, in order that their place may be supplied with more serviceable coadjutors to the other new teeth;—that artificial teeth, from one to a full set, must be subject to no pressure by those of one jaw against the teeth of the other, except where the broad surfaces of the grinders meet in mastication; or be the cause of lateral pressure against the natural teeth, among which they are set;—that the wearers are not to rest satisfied with artificial teeth when applied, until perfectly easy when in use; — and that ease is attainable in any case whatever, by a few visits to the dentist who understands his business; for he can, by degrees, relieve the parts where the frame bears most heavily and painfully, so as not to injure the work, while he affords immediate relief, until at last the substitutes for teeth feel as part or parcel of the mouth itself.

42.—CASES ILLUSTRATIVE OF THE FOREGOING REMARKS ON ARTIFICIAL TEETH.

Case.—A lady who could never be induced by any suffering to submit to the extraction of a tooth; in consequence of which, she suffered severely, and for years, from the toothach. The gums in front of the upper-jaw were spongy and tumefied, emitting matter and blood as often as they were touched. So painful had they become, in addition to the pain arising from carious teeth, that she despaired of ever again being able to eat solid food, and was then living almost entirely on slops. The following was the state of the mouth about the middle of the year 1828, which three years before was pronounced by several eminent dentists incapable of any cure by artificial means. In the under-jaw, the two eye-teeth were healthy, but wasted a good deal by the friction of the teeth opposed to them in the upper-jaw. Beyond the eye-tooth on the left side all the teeth had disappeared with decay, with the exception of the second large grinder, and even that was broken away at the side next the cheek, so far as to expose the nerve. In front, between the eye-teeth, there were none remaining. On the right side, the two small and the first large grinders remained; but so deeply indented and worn down by the attrition of those that opposed them in the upper-jaw, that they were too tender to be touched. In the upper-jaw, the four front teeth, the two eye-teeth, with the two small grinders of the right side, and wisdom-tooth (this latter without an opponent below) still remained. In consequence of which it arrived at, and occasioned pain in, the under gum. On the left side there remained but one grinder; it was the middle one, and had no opponent in the under-jaw.

The ordinary way of meeting such a case would be to declare the impossibility of rectifying the matter, without extracting all the tender teeth; or at most to supply the front teeth in the under-jaw, which would be fastened to the remaining eye-teeth (this was actually tried at Bath): the natural consequence of which method would be, that their constant rubbing against the upper teeth would loosen the eye-teeth to which the artificial ones were fastened.

TREATMENT.

The spongy gums were so tender at first, they could only be pressed, by rubbing the lip against them daily for a few days: by-and-by the finger was applied to them, and a very soft brush dipped in diluted spirits of wine; a great deal of blood and matter was by these means discharged from them: gradually a hard brush could be used without pain; and although these operations were painful at first, because performed repeatedly during the day; by suspending operations occasionally, as the gums became too tender, or were deprived of their skin, they at last became perfectly healthy and cleanly, with a very small quantity only of the pus occasionally oozing from the sockets of the teeth. Owing to long neglect, the corroding tartar had eaten into the necks of these front teeth, and exposed the bone, which was black and tender. The anodyne cement completely allayed all pain in them, and in the other carious and wasted teeth. The rest was done by artificial means, by another dentist. The plan adopted by him was the following:

A gold plate was adapted to the under-jaw, on which were riveted natural teeth in front, and bone formed into teeth for grinders. The carious grinder of the left side being covered over with a gold cap, and the original form of the tooth completed in ivory, the tooth could be used in chewing without pain. Those teeth in the right side that were wasted, required in parts to be lengthened; and on those parts of their gold caps that were sunken, ivory was formed into teeth, by means of which, formed into one frame, all pressure was removed from the sound eye-teeth, which were wasting laterally from the friction of the upper teeth. In the upper-jaw a small gold case was made for each side, which being formed into caps for the remaining teeth, the spaces between were filled up with artificial teeth formed of ivory; by which various contrivances an equal pressure was exerted on all the grinders, and the front teeth were consequently saved from all further lateral friction and abrasion. In about four months this lady went to the country, having the complete use of all her natural and artificial teeth, as perfectly, and, as she said, as satisfactorily, as if she had never suffered from them. It ought to be observed, that no trace of gold or artificial teeth could be observed on a casual glance at the lady's mouth.

CASE.

CONSEQUENCES OF THE APPLICATION OF A WRONG PRINCIPLE IN CONSTRUCTING ARTIFICIAL TEETH.

A gentlemen had lost the two large grinders in the right side of his upper-jaw, in consequence of which, the remaining wisdom-tooth sunk to one side, and permitted an undue friction of the front teeth of the one jaw against those of the other, by which the two front and left lateral incisors were loosened and lost. In supplying their place, in order to keep all fast, four teeth were put into the place of the three, the effect of which was that the space widened, the adjoining teeth being forced out of the dental circle.

Another dentist repaired the case in the following manner: A plate of gold was formed inside the upper front teeth, extending to the remaining wisdom-tooth, and made to cover it and the small grinders with caps. The place of the two lost grinders was supplied with ivory teeth, which were adjusted to the bite of their opponents in the under-jaw, on the new level created by the gold caps of the wisdom-tooth, and two small grinders. By this contrivance all pressure was removed from the front teeth. Three teeth only, the original number, were fastened on the gold plate, when the adjoining ones soon returned to their natural situation in the dental circle. To those who are unacquainted with such matters, it may be gratifying to learn that such artificial teeth can be removed with the same facility as a glove from the hand, and that no trace of the counterfeit is visible when the apparatus is in the mouth.

CASE.

A medical gentleman had lost six teeth of the upper-jaw, consisting of the two bicuspides, first large grinder, and wisdom-tooth of the right side, and the first large grinder and wisdom-tooth of the left side. His teeth were naturally strong, and being too large for the jaws, those that were lost had decayed from lateral pressure. The remaining double tooth on each side, and the bicuspides of the left side, were much worn away from the friction of the corresponding under ones, which permitted the nearer approach of the front teeth, and they were also wasted in mastication; for they met laterally, and were worn to a mere shell; the teeth of the under-jaw reached the gum at every shutting of the jaws, so that the thin points of the front teeth were constantly chipping away, and nothing but the great reduction in their length could induce him to have recourse to artificial aid.

In the ordinary way, the plan would be to fill up the vacancies merely with ivory teeth, fitted to them, or by a gold plate adapted to the parts, and embracing the two remaining grinders, by means of strong collars, on which ivory teeth should be fastened.

By the adoption of either of these plans, the remaining grinders must be permitted to touch their opponents in chewing as usual; the artificial teeth being adapted so as to admit of this (and by persons who operated indifferently, even these would be so short as not to touch their opponents, for fear of causing pain to the gums, from bad fitting); the natural consequence of which would be, that the front teeth of both jaws would continue to grind each other away in mastication as formerly. The plan adopted in this case was the forming of a thin gold plate, for the upper-jaw, adapted to the gums, and covering the grinders with caps (suppose a piece of card between them, which for the time effectually prevents the contact of the front teeth); the vacant spaces were filled up with artificial teeth, nicely adjusted, and on the new level of the remaining natural grinders covered with gold caps, and made to meet the under teeth, so that an equal pressure fell on the old and new ones. The front teeth are now safe from any chance of further wasting, and the gentleman can use every part of his mouth, as effectually as he did before losing a tooth.

It ought to be remarked, whatever dentists may say to the contrary, that artificial teeth should be removed and replaced by the wearer, and should never occasion a day's uneasiness.

CASE.

The first and second large grinders in each side of a jaw were wanting, and one of the two remaining (wisdom-teeth) was hollow and aching. The upper-jaw was defective, but not so much so as to require the aid of artificial teeth, although owing to the loss of four under double ones, the upper front teeth were fast wasting away from friction in mastication. The aching under-wisdom-tooth was cured by the anodyne cement, and regularly stopped with gold. To prevent the further wasting of the front teeth, a small gold plate was adapted to each side of the under-jaw, and made to cover the two wisdom-teeth and bicuspides on each side. The hollow spaces were filled with ivory, formed into artificial teeth, in size, appearance, &c., like those whose places they supplied. They were raised to the same height as the teeth covered with caps, so that an equal pressure fell on all the double teeth of the set, as fairly as if none had ever been lost; while the front teeth, although seeming to touch, never touched one another in shutting the mouth. The preservation of the front teeth was the principal object to be attained by this method, but another was accomplished at the same time, as will be seen by the application of a different principle.

The same jaw might be supplied with ivory teeth only;—but from the extreme sensibility peculiar to the under gums, the pressure of artificial teeth would cause so much pain, as long use alone could reconcile any person to; by having a plate or saddle under them, resting on the gum, the extremities of which were formed into caps for the adjoining teeth, the pressure would be divided so equally as to create no inconvenience.

Were ivory only to be used in this case, the better way of making a plate would be to make it of one piece, and on a model of the whole jaw. If properly made, by its fitting fairly in every part, as well in the hollows, as in that connecting part of it which passes under the tongue from side to side, such a frame could, after a few weeks, be used with comfort; but the preservation of the front teeth would not by this means be attainable, on this account, that the new teeth must have their grinding surfaces on the same level with the present level of the remaining natural grinders, to equalize the pressure, otherwise it could not be borne by the wearer.

CASE.

A person had lost the first and third large grinders of the right side of the under-jaw, and the remaining middle large grinder was decayed so far as to lay bare the nerve. It was frequently affected with toothach, which the anodyne cement allayed; but as it destroys nothing, the nerve still remained, and it being a case of long standing, it suppurated, in consequence of which, no attempt at a more permanent stopping was made.

In this case also the front teeth were wasting fast away; to prevent which a gold plate was adapted to the affected side of the jaw,—the hollow tooth was covered over with a cap,—the vacancy on each side was filled up with artificial teeth, even to the absent half of the broken tooth; and the person has now the perfect use of that side of his mouth in mastication; while all pressure being removed from the front teeth, it is reasonable to expect that they will last the remainder of his life.

The loss of front teeth, from the waste or loss of the double teeth, is perhaps the most common case to be met with, and the most seldom remedied, unless the patient submits at least to the removal of all the remaining double teeth and stumps. The following case will serve as an illustration.

Suppose all the grinders, large and small, of the upper-jaw to be wanting, while the under-jaw is perfect; you have six front teeth, the two eye-teeth and four incisors, remaining: these are wasted away, or forced out at all angles, by the pressure of their under-jaw opponents. A plate of ivory or of gold, with teeth on it, properly adapted to the roof of the mouth, will at once restore the masticating apparatus, and be so constructed as to keep off all pressure from the front teeth; but if even one grinder has been left, and the whole of the new teeth have their grinding surfaces on the same level with it, the friction of the front teeth will continue to be as troublesome as ever. Let the remaining grinder, however, be covered with a cap, and let the new teeth be as high as the grinding surface of such cap, and the front teeth will be as safe as when a card is placed between two double teeth.

CASE.

A gentleman had lost all his teeth except eight, and some stumps; the sockets had absorbed irregularly from the early extraction of some of the teeth, and the gradual decay of others. In the under-jaw, one stump rose considerably out of the gum of the left side, and was very tender. Six of the remaining teeth were in this jaw; viz., a lateral incisor, eye-tooth, and bicuspis on each side; the two front incisors had been gradually loosened and expelled, while the two remaining ones were somewhat loose. In the upper-jaw only two sound teeth remained, with the roots of the others at every possible stage of decay. To remedy this case, two blocks of ivory were fitted to the jaws, and finished as already described in other cases, with this difference, that the two remaining upper teeth were covered over with caps, at the parts not usually seen. The loose teeth, thus supported, became fast again, as their sockets had not been much absorbed.

CASE.

The following case is that of a young man, and is sufficiently interesting. The complement of teeth in the under-jaw was nearly complete. In the upper-jaw only eight remained; viz., the two bicuspides, and eye-tooth of the left side, with the eye-tooth and only one large grinder of the right side, with the two front and one lateral incisor. The remaining large grinder was much decayed in the grinding surface, and ached, as did the first remaining small grinder of the other side, much decayed also from lateral pressure. Both the affected teeth were cured by the anodyne cement, and permanently stopped with gold; but the remaining ones were wearing fast away, from the absence of the grinders. The evil was more apparent, as the front teeth of both jaws met perpendicularly. In order to prevent the further wasting of the front teeth, a plate of gold was formed on a model of the mouth. The remaining large grinder that was plugged, was covered over with a cap, as were the two small grinders of the other side, except at the visible parts where the gold was cut away. The place of the lost grinders was supplied by ivory teeth, on the same level as the covered teeth; and now, although he has the perfect use of every part of his mouth, the front teeth do not meet, although they seem to meet, and consequently are not subject to further waste from attrition.

Perhaps many dentists will say that the cases here detailed are easy, and such as they are daily accustomed to rectify. Those who really can do so, without creating annoyance to their patients, deserve the gratitude of the aged and the toothless.

> " ———; si quid novisti rectius istis,
> Candidus imperti; si non, his utere mecum."
>
> HORACE.

THE END.

C. WHITING, BEAUFORT HOUSE, STRAND.